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ORIGINAL LECTURES.

CARDIAC LESIONS FROM EXCESSIVE MUSCULAR EXERTION.

*An Address delivered before the Alumni Association of the
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IN 1865, in the Croonian Lectures, Dr. Peacock, of London, first called attention to the cardiac lesions dependent upon severe and protracted muscular exertion. His observations were made among the miners of Cornwall, and convinced him that the cardiac dilatation and hypertrophy so common among such workmen were dependent upon two factors: the muscular strain and the impure air in the mining shaft.

Shortly after the civil war in our own country, Da Costa, after a large experience in the hospital practice of that time, called attention to what he termed "irritable heart." In some of these cases hypertrophy, and in rare cases dilatation, was found. As a rule, the symptoms were subjective, rather than objective. Those most subjective to this trouble were soldiers who, being somewhat out of health, underwent long and severe marches, hard fighting, with the accompanying mental anxiety, protracted sieges, building fortifications, etc.

After the Franco-Prussian war of 1870-71, Fräntzel was able to confirm Da Costa's observations, and in addition to the causes above mentioned, laid special stress on the pressure on the thorax of the uniform and other military accoutrements. Quain, Fothergill, Morgan, Flint, Seitz, Leyden, and others have drawn attention to the causation of cardiac lesions by excessive muscular effort. The literature of this subject is fairly developed, but as a clinical feature it has not yet obtained the general attention the subject demands. Many cases, affected with obscure and indistinct cardiac symptoms, took origin in this way, and cannot be relieved unless the treatment is conducted with this view in mind.

In 1871 Dr. Clifford Allbutt published a paper, "The Effect of Overwork and Strain on the Heart and Great Bloodvessels," giving a personal experience during an Alpine pedestrian tour. It was in the afternoon, the morning having been spent in mountain climbing, when he determined to reach a still higher peak than the one on which he then stood. During the ascent, which was very difficult and laborious, he suddenly became conscious of "a strange and peculiar *besoin de respirer*, accompanied by a very distressing sense of distention and pulsation in the epigastrium." Placing his hand over the cardiac region, he felt a labored, diffused beat over the epigastrium. Ceasing further attempts at ascending the mountain, and remaining quiet, these unpleasant symptoms disappeared, but another attempt to continue the ascent caused a return of the symptoms.

As soon as he reached level ground he was perfectly easy, and felt none of the symptoms above mentioned. This continued until the next morning about three o'clock, when he was awakened by a recurrence of the symptoms. These uncomfortable sensations finally disappeared, to return no more. Such is a brief clinical history of a case of the affection under discussion by an accurate and skilled clinician. It is true, we lack the results of a physical examination, but these would probably have been almost negative, serving only to exclude any chronic organic change; possibly dilatation might have been demonstrated.

Dr. Brunson, of New York, quoted by Fothergill, had a similar experience during a pedestrian tour in Tyrol, and by questioning the guides found that such occurrences among tourists were not infrequent, and usually occurred when the individuals were out of sorts, or had undergone severe and long sustained efforts. When these attacks occurred, the victim being on lofty peaks or dangerous passes, the guides were compelled to carry him down as best they could.

Such is a brief reference to the literature of the subject of this paper. As yet the lesion has no universal cognomen: cardiac overexertion (Seitz), heart strain (Allbutt), muscular subparalysis of the heart (Fothergill), irritable heart (Da Costa).

This paper is based upon two cases believed to be cardiac lesions dependent upon excessive muscular effort; one case seen in the Vienna General Hospital, and the other in private practice. Full notes of the history and physical examination were taken, but unfortunately have been misplaced, and this report is from notes taken at the lecture.

Patient, æt. nineteen, was an apprentice to a wagon-maker, and was compelled to work diligently from 4 A. M. to 9 P. M.; strongly built, with good muscular development. Eight months ago had a slight attack of sickness, lasting only a few days, but from patient's account it was impossible to form a definite opinion as to its nature. Close questioning seemed to exclude the probability of its having been rheumatism. Perfectly well until six days ago, when, engaged in pushing a wagon out of the shop, he felt an acute pain at a point, according to the patient's statement, corresponding to the fourth intercostal space, and outside of the left mammillary line; also marked dyspnoea and palpitation. At the time of examination all these symptoms, except the pain, have disappeared, and this is very slight, except during exertion. Evening temperature, 37.6°; respiration 18; pulse 70, regular, and fairly strong. At this time the patient has been in bed for five days. Urine normal.

Physical examination gave very interesting results. Inspection showed the heart beat diffused over the fourth and fifth intercostal spaces and under the nipple. Palpation showed it to be weak and flapping. On tapping over the cardiac region with the tips of the finger sev-

eral times, the area of cardiac dullness could be changed. At first this line of dullness extended from the third rib to the sixth rib below, and from the left mammillary line to the right parasternal line. By striking the chest wall over the heart with the finger tips, the upper and right borders of the cardiac dullness became normal, but the lower and left lines remained as above mentioned. In a few minutes the area of dullness became as before. Auscultation gave no demonstration of murmurs; the sounds were weak and flapping.

The lungs were normal; the liver and spleen were somewhat enlarged. No oedema or anasarca.

As I left Vienna shortly after this, I was unable to follow the case, and hence do not know the final issue. Dr. Heitler, Prof. Drasche's assistant, who showed the case to us, told us that such cases were not infrequent, and that the majority of these cases, under proper management, recovered perfectly, with no permanent cardiac lesion. The treatment in this case consisted in rest in bed, concentrated and nutritious food, with infusion of convallaria.

My own case was seen last October, and I have had it under observation since that time.

October 25, about 6 P.M., I was called to see J. S., laborer, aged eighteen, who had been sick only a few hours; stout and well developed. During childhood had the usual children's diseases; considered himself perfectly well until the commencement of the attack in which I saw him. He was addicted to the excessive use of both tobacco and liquor. He had been engaged for some time in digging trenches, and in loosening and throwing out the dirt he was compelled to subject himself to violent muscular exertion. That afternoon, while thus engaged, he suddenly felt a sharp pain in the cardiac region, accompanied by distressing dyspnoea and palpitation. He also felt faint, and was scarcely able to get out of the trench. He was finally taken home, and about two hours after I first saw him. I found him in bed, propped up with pillows, face somewhat cyanotic, and the breathing slightly labored and increased in rapidity. Temperature 99°, respiration 24, pulse 108, weak, compressible, and irregular. The sensation imparted to the finger by the pulse reminded me of the flight of birds as they endeavor to lead an intruder from their nests. Moving along evenly for a few seconds, then apparently falling or fluttering along, then again the even, regular flight. In this case the pulse for several beats would be regular, then the irregular laboring effort, and again the regular beat. With the hand over the heart this was even more distinct.

Physical examination showed lungs normal. Area of cardiac dullness extending above to fourth intercostal space, to right parasternal line, below to sixth rib and to left mammillary line. Apex beat diffused, but strongest in sixth intercostal space below the nipple. Auscultation showed no murmurs; heart sounds not perfectly clear; somewhat muffled and flapping.

Liver enlarged, but I could not demonstrate any splenic enlargement. Urine passed the next morning examined and found apparently normal. I saw him again the next morning, and his condition was about the same; the pulse had decreased in frequency, 96, but was still irregular and weak. His condition remained about the same for eight days before any decided improvement occurred. The dyspnoea disap-

peared, and the cardiac action was slower, 84, stronger, and more regular; the cardiac pain disappeared on the fourth day. His sleep, which had been disturbed by the irregular heart action, now became sound and refreshing. Area of heart dullness still enlarged. He was kept in bed until the twenty-first day, when he was allowed to set up for awhile; then, by gradual increase in the amount of exercise, he was at last allowed to go out. At this time, thirty days after the attack, the area of dullness was almost normal; still extending a little too much to the left. The apex beat was localized and strong. Since that I have examined his heart several times and have found about the same conditions.

At my first visit I ordered as nearly as possible absolute rest in bed, milk, and underdone beef and mutton, no tea, no coffee, and absolute quiet in the room; in addition to this, cit. caffeine and fl. ext. coca, every four hours. His digestion was good, and there were no gastric disturbances of any kind. He had some bronchitis, but it needed no treatment, and the only indication was to aid the exhausted and laboring heart.

On the twelfth day iron and digitalis were ordered for him, and this combination he continued to take for a month. He was directed to give up all manual labor, and to avoid any violent muscular effort. He obtained a position as a clerk, and has so far had no return of the old symptoms. He has decided to go to Alabama to settle, but does not expect to do any heavy work, so that the probability is that there will be no excessive muscular effort to impair the present integrity of his heart.

Such is a brief clinical history of a case that to me was very interesting. Previous to seeing the first case I had paid no attention to the subject; in fact, had never heard of it except as a clinical curiosity. What was my diagnosis? "Dilatation of the heart from muscular exertion." Voltaire says "Only the charlatan is always certain," so I do not claim an absolutely positive diagnosis, but post-mortem examinations of cases presenting similar clinical aspects have demonstrated the lesion claimed.

Thompson reports the case of a man, aged twenty-eight, who, after raising a heavy burden, was taken with symptoms of heart-failure; he gradually grew worse, and after fourteen days died. Post-mortem examination showed a dilated heart with thin yielding walls, but no valvular disease. From the present condition of my patient's heart, as shown by physical examination, I am inclined to believe that a slight compensatory hypertrophy has taken place.

To propel properly the blood through the body the heart must act with force enough to overcome all resistance to the blood flow. Many arteries are crossed by muscles or tendons, or lie between two planes of muscular tissue. When these muscles are contracted the lumen of the bloodvessels is diminished, and the blood-pressure between the heart and the constriction is increased. To overcome this the heart must contract with increased power and energy. In violent muscular effort, especially when the muscles of the upper body are in action, we hold the breath in order to give them a firmer point of support and increase the efficiency of the effort. The temporary cessation of respiration stops the pulmonary circulation; this acting through the right heart stops the venous circulation,

and thus in the capillaries and arterioles directly opposes the propulsive power of the heart. During the straining the nerve-centres are supplied with imperfectly oxygenated blood, the vasomotor nerves are irritated, and thus blood-pressure is increased. Violent muscular action produces dyspnoea and increased heart-action, dependent upon the inability of the heart to overcome the increased resistance, and force the blood into the arterioles; the heart laboring to overcome the obstacle receives into its cavities more blood than it can force out, and then as evidence of failing heart's action the dyspnoea and palpitation appear. By regular and gradual exercise the heart accustoms itself to this increased resistance, and overcomes it without disturbance. Such is the process of "training," and to persons who have undergone this, feats of effort and endurance, impossible to the untrained, become easy. In many cases this training produces an evident increase in the size and capacity of the heart. Eclipse, the noted race-horse, had an unusually large heart. If this training be too severe, the heart is over-strained, and unable to do the required work; the individual is said to be broken-winded. In such cases even slight exertion produces dyspnoea and irregular heart action; this condition may be permanent, or, under proper management, only temporary.

Persons engaged in severe physical labor in constrained and awkward positions—coal-miners, for example—are especially prone to cardiac changes. The hands and arms are, of course, used mostly, and to increase the efficiency of the effort, the muscles of the entire body, especially the trunk, are called into action, thus affording the muscles of the arm a fixed point of support, and increasing their power. In rowing the feet are firmly fixed, and then the muscles of the arm and trunk are exerted to make the stroke of the oar. As before stated, in addition to the resistance of the muscular action to the blood-current comes increased resistance from holding the breath, and thus impeding the pulmonary circulation. We are all familiar with the so-called "striker's" heart; in these cases, by the excessive muscular effort in hammering the heated metal, and in the workman's endeavor to do as much as possible in the limited time during which the metal is hot enough to be worked, increased work is thrown upon the heart, and at the end of the shift the workmen are found in a state of intense vascular excitement, dyspnoea, and excited cardiac action. Eventually, in a large number of these cases, hypertrophy of the heart occurs, and for the time being this enables the heart to overcome the increased resistance. The aortic valves, however, become affected from the force with which they are closed by the excessive intravascular pressure, increased as it is both by the cardiac hypertrophy and the atheromatous changes in the aorta, and thus serious cardiac lesions are produced.

Persons engaged in violent gymnastics or athletic sport often suffer with extreme dyspnoea and palpitation. This may disappear entirely, or may return whenever the exercise is attempted. On entirely ceasing the violent muscular exercise no further symptoms follow, but the workman, compelled, in order to be self-supporting, to continue his work, prolongs the action of the efficient cause, and finally becomes a victim of serious cardiac disease.

Among mountain-tourists, most of whom at home lead lives comparatively free from active muscular exercise, heart strain might be expected to occur frequently. They seem to think that the more violent exercise they take the more benefit they will derive from their summer outing. In their rivalry to make the highest and most dangerous ascents they undergo violent and prolonged muscular efforts, necessarily producing intense physical exhaustion; and it is not strange that in some of these cases the heart must become unable to meet the increased demands upon it. Involved in the general muscular exhaustion, dilatation may occur, or, more often, dyspnoea, cardiac distress, and palpitation betray the failing heart.

So far we have discussed the question as relating to the heart which was assumed to be of normal nervous, and muscular power. We must now take up those cases in which, while there is normal muscular power, the heart lacks the proper nervous stimulus, and without which it cannot functionate properly. Muscular tissue, in order to retain its tonicity and elasticity, these being necessary to its proper action, must be supplied with active and abundant nerve force. Lacking this, the muscle acts slowly and laboriously, and is easily wearied and exhausted. The wearied heart muscle shows itself in palpitation and dyspnoea. Having lost its tonicity and elasticity, it may be dilated by the increased blood-pressure; or, what is more usually the case, cardiac distress and dyspnoea; the so-called cardiac asthma is an evidence of the strain to which the heart is subjected.

The causes of this defective nerve-supply are such as depress the general nervous strength: anxiety, grief, late hours, dissipation, severe and prolonged mental labor, the abuse of tea, coffee, alcohol, previous sickness. Impure air also indirectly affects the integrity of the heart. By forcing serum charged with carbonic acid through a frog's heart Cyon caused stoppage of the pulsation; within a short time after the carbonic acid gas was removed, and pure serum was forced through, the pulsations again commenced. Impure air means imperfectly oxygenated blood; such blood sent to the brain means the evolution of defective nerve force; this insufficient nerve stimulus supplied to the heart causes weakened cardiac action, and loss of tonicity and elasticity in the the heart substance. In addition, we have the direct depressant effect of the impure blood on the heart itself, affecting the ganglia in the cardiac tissue.

Taking into consideration the causes enumerated, the number of individuals exposed to these causes, and the comparative infrequency of the occurrence of heart-strain, we must take refuge in personal idiosyncrasy. In these cases of heart-strain there must be, in addition to the efficient cause, a predisposing cause beyond demonstration. "Personal equation" is an explanation that, in our lack of knowledge, we must frequently employ, and with our present means of investigation, will probably remain, like the " x " in algebra, an unknown quantity.

We have now discussed the direct relation of muscular exertion to cardiac lesion, and also some causes influencing the heart, weakening and depressing its power, thus rendering it more liable to injury from the muscular effort. We have shown the possible direct effect on the normal heart of severe muscular exertion; then how

much more probable is this effect when promoted by loss of nervous power, and personal idiosyncrasy?

What is the pathology of this lesion? In some cases no physical change whatever; in others, simple dilatation; in some, hypertrophy, sometimes fatty degeneration, but, according to Leyden, never sufficient to account for the dilatation which he believes to be due to a true stretching of the muscular tissue. The heart, in order to meet the increased demands upon it, may add to the dilatation a hypertrophy that maintains the integrity of the cardiac function for years, and the patient be entirely free from cardiac symptoms. If then, from any cause, the hypertrophy yields, we have a case of organic heart trouble dependent upon the over-strain years before, and not, as might be supposed, upon some recent cause. In cases of long standing, or unusual severity, marked oedema may be present; Leyden, in all his autopsies on cases of this kind found dilatation, but, of course, this dilatation and consequent cardiac failure were the causes of death, and as some cases recover, apparently completely, we must suppose that in cases in which recovery had occurred there was either originally no anatomical change in the heart tissue, or the dilatation disappeared, and there was a restitutio ad integrum.

From the foregoing, we think the following conclusions justifiable:

1. The heart-muscle, like other muscles, is subject to injury from overwork.
2. Like other muscles, it may be weakened by unusual and excessive work, and losing its tonicity and elasticity, may, by the dilating force of the increased blood-pressure, be dilated.
3. Like other muscles, it may accustom itself to the increased exercise and become hypertrophied.
4. Like other muscles, it may not exhibit any physical change as the result of overwork, yet be exhausted, and give evidence of it by weakened and irregular (spasmodic) action.

The heart may show the evidences of strain and overwork in two ways:

1. By weakened and irregular action without any demonstrable physical change.
2. In addition to the irregular action of the heart there may be physical changes, as dilatation or hypertrophy.

Of course, such symptoms as characterize the first condition, also accompany the second, and, in addition, physical examination gives evidence of cardiac enlargement. When compensatory hypertrophy has occurred, except the increased cardiac volume, there may be no other evidence of the preceding heart-strain.

In these cases a previous history of excessive muscular effort will serve to attract special attention to the cardiac symptoms. The symptoms may occur suddenly, as the result of a severe and prolonged effort, or may appear gradually; in the latter cases the predisposing causes, loss of nervous power, impure air, etc., are the most important factors.

The immediate symptoms are included in the term cardiac asthma; labored and irregular action of the heart, distressing dyspnoea, and pain in the cardiac region. Dependent upon the severity of the strain, these symptoms vary in intensity; sometimes slight, and again counterfeiting approaching dissolution. Cerebral anæmia from

imperfect cardiac action causes faintness and vertigo. When the heart has undergone dilatation we have proof of this as the result of physical examination; that is, of course, if sufficiently dilated to be detected. In most of the first class of cases there is slight dilatation, but which cannot be detected. The increased area of cardiac dulness, assuming a globular form, is evidence of general dilatation; if dulness increased toward the right, the right ventricle is involved; if downward and to the left, the left. The apex beat is usually the best criterion of the condition of the left ventricle (Leyden). Auscultation usually reveals clear, but weak, or flapping heart-sounds. Occasionally a systolic murmur at the apex is heard, due, as is claimed, to a relative insufficiency of the mitral valves. Nothnagel, in opposition to most authorities, denies the origin of a murmur from such a cause.

In cases that go from bad to worse, the dyspnoea becomes very severe and distressing; the cardiac pain becomes worse, resembling true angina pectoris; incapacity for mental or bodily effort; attacks of vertigo and faintness; disturbances of the digestive tract; disturbances of the circulation producing oedema.

Finally, the heart-muscle becomes greatly exhausted, and we have extreme cardiac weakness; the heart lacks force to propel the blood, and cyanosis, suppression of urine, collapse, etc., appear. At last coma ensues, and the patient dies. The last stage is similar to the last stage of valvular disease; in fact, so far as cause and effect are concerned, is identical, as it is the asystolia or cardiac insufficiency that causes death.

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ORIGINAL ARTICLES.

ABDOMINAL SECTION FOR TRAUMATISM; INTESTINES SUTURED: RECOVERY.

BY CORNELIUS KOLLOCK, A.M., M.D.,
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On the 19th of December, 1886, Samuel Gaines, colored, aged fifteen years and seven months, was shot through the abdomen with a Smith & Wesson pistol, ball 38 calibre, distance six feet. At the time of the accident the patient was standing, and his comrade, from whose hands the pistol was discharged, was sitting on a low stool at his left side. The ball entered the left inguinal region, passed obliquely upward, and emerged in the right umbilical, about one and a half inches from the median line.

I saw the case about six hours after the accident, when the following features were presented. The patient was very restless, had an anxious expression

of countenance, much thirst, and a weak pulse; also a deep-seated, emphysematous, crackling sound around the borders of the external opening. There was hepatic resonance, which, though generally regarded as pathognomonic, is not an unerring sign, for it may be caused by the transverse colon being placed between the liver and the walls of the abdomen. A slight displacement of the liver might also give rise to resonance. The rectal temperature was decidedly subnormal.

These signs, especially when considered with reference to the course of the ball, which had been explored with Nélaton's flexible spiral probe, clearly indicated intestinal perforation, at one or more points. Laparotomy was decided upon, and while preparations were being made for the operation, there was a movement of the bowels, and blood was passed per anum; small particles of fecal matter were also observed escaping through one of the external openings. This settled the question of intestinal perforation beyond all cavil.

The operation was performed under some difficulties, as is often the case in surgical practice out of town, where intelligent assistance cannot always be obtained. The patient resided on a plantation, remote from any settlement; the nearest physician being eight or nine miles distant, much time must elapse before his aid could be procured. The earlier an operation is done in a case of this kind the better; every hour's delay adds to the danger of peritonitis and septicæmia. The peristaltic motion of the bowels was evidently recovering from the paralysis imparted by the shock, and blood and fecal matter were already being extravasated into the cavity. I therefore determined to proceed with such help as I had. An intelligent white man, and two or three negroes constituted my corps of assistants.

I administered the chloroform, and when anesthesia was fully established, gave the towel to the white man, with instructions to withhold it when directed. The patient had been previously troubled with diarrhoea, had eaten nothing since dinner of the previous day, and very little then. This was in some respects an advantage, and in some a disadvantage. He was very gaunt, and the abdominal walls were relaxed, and the bowels flat and flabby. This somewhat embarrassed the operation, but proved in the end a fortunate circumstance.

By an incision of three inches in the median line, below the umbilicus, the peritoneum was reached. The edges of the opening were thoroughly mopped with sponges wrung out of hot water before the peritoneum was opened; consequently very little blood, if any, escaped into the cavity. When the cavity was reached, every precaution was taken to prevent the bowels from becoming chilled, by enveloping them in hot cloths. Search was then made along the track of the ball, and three intestinal openings were found—two in the descending colon, the ball having entered a little above the sigmoid flexure and passed through; a third opening was found at the point where the ball emerged from the cavity, it having cut through a knuckle of the small bowel. An appendix epiploicæ, which was found lacerated and bleeding freely, was tied with catgut at the base

and cut off. The discharge of blood from a small vessel on the inner side of the colon was so free that it was necessary to throw a small ligature around it. There was considerable oozing from a number of smaller vessels which was readily checked by sponges soaked in hot water. The edges of the intestinal openings were now pared and drawn together by Lembert's suture, the stitches being placed only a line apart. Care was taken in putting in the stitches to introduce the needle more than a quarter of an inch from the opening, causing it to penetrate to the submucous tissue, and then bring it out again about an eighth of an inch from the edge of the wound on the same side. On the opposite side it was introduced about one-sixth of an inch from the opening, and brought out a quarter of an inch from it. The advantage from this precaution is that, when the sutures were tightened, the mucous membrane was inverted, and the serous surfaces were brought in contact. Serous surfaces unite readily when brought in apposition; but no union can possibly be effected between two mucous surfaces, or between a mucous and a serous surface.

The peritoneal cavity contained a considerable quantity of blood and fecal matter. The cavity was thoroughly mopped with hot sponges. The nozzle of a fountain syringe was introduced—the patient being turned a little to one side—and a steady stream of hot carbolized water kept up till the water came out clear.

All blood and fecal matter being removed from the cavity, the incision was closed by five white silk sutures, supported by adhesive strips, the whole enclosed in a gauze dressing and an elastic flannel bandage. The bowels were kept locked by repeated doses of morphia for eight days, during which time not a particle of food was allowed, except occasionally a small glass of fresh milk. The sutures were removed on the eighth day, when the parts were firmly united by first intention. All dressing, except the adhesive strips and flannel bandage, was now removed, and the patient was allowed a light diet of peaches and milk and mush and milk for a few days, when he resumed his regular habits. On the morning of the ninth day there was a healthy natural action of the bowels, accompanied by no pain or inconvenience. The operation was in all respects very satisfactory. The patient recovered without a bad symptom, and is now, more than three months since the accident, perfectly well, and attends regularly to the duties of a farm hand.

Although the profession is now much interested in abdominal section for any purpose, more especially for traumatism and suturing the intestines, the literature on the subject is yet very meagre. Dr. T. S. K. Morton, of Philadelphia, in an able and interesting paper, published in *THE MEDICAL NEWS* of February 19th, furnishes considerable valuable information on the subject, more than can be found elsewhere. He also makes some excellent suggestions as to the manner of diagnosing the existence of intra-peritoneal injury; also the circumstances under which abdominal section would be proper. But Dr. Morton is not correct in all his

statements. He says the first recorded case of gunshot wound treated by abdominal section is that of Dr. Kinloch, of South Carolina, in 1881, and that the first recovery is that of Kocher, of Switzerland, in 1883. Dr. Kinloch's operation was done in 1862, on a soldier in the Confederate army. The operation was successful, and the patient lived a number of years afterward. This case is reported in the *Medical and Surgical History of the War of the Rebellion*.

BACTERIOLOGICAL NOTES.

BY GEORGE M. STERNBERG, M.D.,
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The Bacillus of Typhoid Fever.

IN a paper read before the Association of American Physicians in June last, and published in THE MEDICAL NEWS of August 21, 1886, the writer has reviewed the evidence relating to the etiological import of the bacillus of Eberth, up to the date at which this paper was written. Since that time several important papers have been published, in which detailed accounts are given of extended experimental investigations relating to the biological characters of this bacillus and its relation to the disease with which it is associated. My object at present is to consider briefly this recent experimental evidence, and this I can best do under several distinct heads.

(a) *Typhoid bacilli in the blood.*—Almquist,¹ in 1882, reported that he had occasionally found in the blood of typhoid patients during the second or third week of the disease short rods. In the same year Dr. Moxon, of London, in a paper contributed to *The Lancet*, says,

"During last winter's clinical session, some of my most acute and intelligent friends searched carefully for germs in the blood of several severe typhoid cases. The result was that one bacterium was seen, only one, but I was told that it was a very active one."²

Cornil and Babes (1885) say that the bacilli are sometimes found in the blood.

Meisels (1886)³ claims to have found the bacillus nineteen times out of twenty in blood drawn from the finger.

Neuhauss (1886)⁴ states that he has found the bacillus nine times out of fifteen in blood drawn from the rose spots in cases of typhoid fever. Opposed to these claims we have the negative results reported by several very careful observers, and especially those recently published by Seitz.⁵ This author examined blood drawn from the finger and from roseolous spots in eleven cases. Seven times the blood was drawn from the finger and fourteen times from the rose spots. This blood was examined both by culture-methods, and by staining and direct microscopical examination. Forty-five cover-

glass preparations stained with an alkaline solution of methylene-blue gave a negative result. Thirty-seven gelatine plates, and thirty-five *Gläsern*, prepared according to the method from which Neuhauss had previously reported successful results, gave an absolutely negative result.

Gaffky,¹ in his elaborate and conscientious experimental research upon the etiology of "abdominal typhus," also gave his attention to this point. He examined blood drawn from the rose-colored spots, from the skin over the liver, and from the forearm, in every case without result.

Fränkel and Simmonds,² in a recent publication, have also reported their failure to find the bacillus in six cases, in the second and third week of sickness, in which they have examined blood drawn from the index finger by the method of cultivation.

Pfuhl,³ in 1886, also reports his failure to find the bacillus in blood drawn from typhoid patients.

In view of all this negative evidence from observers of recognized skill in bacteriological investigation, it seems to me that the positive results reported by Almquist, Meisels, and Neuhauss, must be considered with scientific scepticism, unless they receive further confirmation from a source which inspires confidence.

(b) *Examination of spleen-pulp.*—Maragliano,⁴ in 1882, and Klein,⁵ in 1884, have reported their success in finding the bacillus of Eberth in spleen-pulp extracted during life by means of a hypodermatic syringe. Quite recently (1886) Philipowicz⁶ has given confirmatory evidence upon this point. The bacillus was found in four cases, and its presence further demonstrated by culture experiments with material withdrawn from the spleen.

Seitz has not ventured to repeat these experiments, as he considers puncture of the spleen to be a dangerous procedure. In a case in which a puncture was made immediately after death, for the purpose of obtaining a little splenic pulp, he has seen, when the cavity of the abdomen was subsequently opened, a long rent in the capsule of the spleen, and a considerable escape of blood into the peritoneal cavity.

The examinations made by Seitz, of splenic tissue obtained post-mortem, fully confirm those of Koch, Eberth, Gaffky, Meyer, Fränkel, Simmonds, and many other observers, as to the presence of Eberth's bacillus in this organ in a large majority—and presumably in all—of the cases of typhoid fever. Seitz made plate cultures from the spleen in 22 cases, with a successful result in every instance. In 14 of these cases the typhoid bacillus was obtained in pure cultures—that is, no other microorganisms appeared upon the plates.

(c) *Typhoid bacilli in the dejections.*—Gaffky (op. cit.) and Pfuhl (op. cit.) failed to obtain the bacillus from the dejections of typhoid patients, but later investigators have been more successful. Thus, Fränkel and Simmonds, in 1885, were successful in

¹ Tyfoid febers bakterie, Nord. med. Ark. Stockholm, xiv, No. 10.

² Lancet, Dec. 9, 1882, p. 974.

³ Wiener med. Wochenschr., 1886, No. 21.

⁴ Berliner klin. Wochenschr., 1886, Nos. 6. and 24.

⁵ Bakteriologische Studien zur Typhus-Ätiologie. München, 1886.

¹ Mitth. a. d. Kaiserlich. Gesundheitsamte, Bd. ii.

² Die ätiologische Bedeutung des Typhus bacillus, 1886.

³ Deutsche Militärärztl. Zeitschr., 1886, p. 23.

⁴ Centralbl. f. die med. Wissensch., 1882, No. 41.

⁵ Ibid., 1884, p. 695.

⁶ Refer. in Centralbl. für klin. Med., 1881, p. 278.

3 cases out of 11. Pfeiffer¹ also was able to obtain the bacillus from perfectly fresh discharges obtained from patients during the epidemic at Wiesbaden in 1885.

Seitz (op. cit.) examined, by the plate method, 19 dejections from 6 different cases, and obtained a positive result 8 times.

(d) *Typhoid bacilli in the urine.*—Seitz made careful researches by the plate method in 7 cases, with a negative result in 5. In 2 cases, however, the typhoid bacillus was found in great numbers. Sixty plates made from the 5 cases remained sterile. On the other hand, the plates from the remaining 2 cases furnished a multitude of colonies, which, by the characteristic growth on potato, were demonstrated to consist of typhoid bacilli. In these 2 cases alone the urine was found to be albuminous. Seitz supposes that in these cases there was preëxisting disease of the kidneys, as the urine was found to be albuminous when they were first admitted to hospital. He remarks that these results give support to the view of Wyssokowitsch,² who arrives at the conclusion that a filtering membrane in normal condition is impenetrable for bacteria, and that it is only when the normal separation walls are injured that bacteria which have accumulated can escape at the point of injury.

In sections made from the kidney in 7 cases of typhoid fever, Seitz failed to find colonies of the bacillus, as Gaffky had previously done in 3 cases out of 7.

(e) *Experiments upon animals.*—The earlier investigators—Murchison (1857), Birch-Hirschfeld (1874), Klein (1875), Bahrdt (1876), Von Motschukoffsky (1876), Walder (1879)—in their experiments with the discharges of typhoid patients, and with blood, failed to obtain any satisfactory evidence that the disease may be transmitted to the lower animals. Gaffky (1884), operating with pure cultures of the bacillus, also failed to obtain any positive results in experiments upon rabbits, guinea-pigs, rats, mice, and Java apes. Fränkel and Simmonds, on the other hand, have shown that such cultures, when injected in *considerable quantity* into the circulation of a rabbit, or into the peritoneal cavity of a mouse, may cause death after an interval varying from *a few hours to two or three days*. These experimenters report a positive result—i. e., death of the animal—in 2 cases out of 20 in which the injection was made into the peritoneal cavity, and in 20 cases out of 46 in which the culture was injected into the circulation of rabbits through the large vein of the ear.

In the fatal cases the presence of the bacilli in the spleen was demonstrated by microscopical examination and by culture experiments. The more recent (1886) experiments of Seitz were made upon guinea-pigs and rabbits. The general result of these experiments is to confirm Fränkel and Simmonds as to the pathogenic power of cultures of the typhoid bacillus when injected in sufficient quantity into the circulation, or when introduced into the alimentary canal. But these cultures contain both

the bacillus and the ptomaine produced during its active growth, which was made the subject of experiment by Brieger¹ in 1885. The more recent experiments of Sirotinin,² of A. Fränkel,³ and of Beumer and Peiper,⁴ show very clearly that the pathogenic power of the cultures cannot properly be ascribed to the direct action of the bacillus, and that there is nothing specific or characteristic in the effects produced.

In the experiments of A. Fränkel upon guinea-pigs the method of Nicati and Rietsch was followed—that is to say, cultures were injected into the duodenum, either with or without previous ligation of the common bile duct. In fourteen experiments a positive result was obtained seven times. The animal died at the end of three to seven days. The post-mortem appearances consisted in swelling of the spleen, swelling of Peyer's patches both in the small and large intestine, and, in a single case, a fresh ulcer one-half of a centimetre in diameter. The intestinal contents were fluid. The mesenteric glands were swollen, of grayish-red color, and partly studded with hemorrhagic foci. The experiments of Beumer and Peiper show very clearly that these appearances cannot be taken as evidence that the animals died from a specific typhoid process, for similar results were obtained by them from the injection of cultures of five other microorganisms; viz., (1) a greenish-yellow bacillus which does not liquefy gelatine; (2) *Bacillus subtilis*; (3) a white bacillus; (4) *Micrococcus prodigiosus*; (5) a yellowish-green bacillus which liquefies gelatine.

The authors referred to sum up their results in the following language.

"When for the decision of this question we consider the above recorded experiments, there can be no doubt that they give concordant evidence in favor of the view that the typhoid bacillus has no specific characteristic action upon the lower animals experimented upon. All of the anatomical changes, such as swelling of the spleen, of the mesenteric glands, of Peyer's patches, the evident inflammation of the upper portion of the small intestine with the watery overflow into the lumen of the gut, which leave us in doubt whether we have before us a disease process similar to that of typhoid, all of these we see in equal degree, with almost the same regularity, resulting from the intravenous or intraperitoneal introduction of the five named species of bacilli. Everywhere the same disease-picture, the same pathological lesions."

The result which Beumer and Peiper have reached after a protracted and painstaking series of experiments is in accord with that which Sirotinin has attained by a more direct method. This author injected cultures which had been subjected to a temperature which insured the destruction of the bacillus, and of spores, if present, in quantities corresponding with the amount of non-sterilized cultures which had given positive results in the experiments of Fränkel and Simmonds, and of

¹ Weitere Untersuchungen über Ptomain, Berlin, 1885.

² Die Uebertragung von Typhus Bacillen auf Versuchthiere, Zeitschrift für Hygiene, Bd. 1, Heft 3, 1886.

³ Zur Lehre von der pathogenen Eigenschaften des Typhus bacillus. Centralbl. f. klin. Med., 1886, No. 10.

⁴ Bacteriologische Studien über die etiologische Bedeutung der Typhus bacillen, Zeitschrift für Hygiene, Bd. 1, Heft 3, 1886.

¹ Deutsche med. Wochenschrift, 1885, p. 500.

² Ueber die Schicksall der in's Blut injectirten Mikroorganismen im Körper der Warmblüter, Zeitsch. f. Hygiene, Heft 1, Bd. i.

Seitz. Sterilization was effected by exposing his cultures to steam at a temperature of 100° C.

Injections were made into the circulation of rabbits, through the ear-vein, into the peritoneal cavity and beneath the skin of mice, and were administered to guinea-pigs *per os*, and by injection into the peritoneal cavity. The dose employed corresponded with that used in the experiments of Fränkel and Simmonds, and of Seitz.

Experiments were also made with culture fluids from which the bacilli had been removed by means of the Chamberlain filter.

The general result may be briefly stated in the language of the experimenter:

"These experiments show in a definite manner that in fact, culture-solutions from which the typhoid bacillus has been destroyed by sterilization or removed by filtration, induce exactly the same morbid phenomena—*Krankheitserscheinungen*—as cultures containing living bacilli; that they cause death in the same time, and that they induce similar pathological changes.

"As in the experiments of Fränkel and Simmonds, so also in my own, the result depended, in general, upon the quantity of the culture injected."

Sirotonin has observed a difference in the poisonous properties of cultures in different media. According to his experiments, more of the poisonous ptomaine—typhotoxin of Brieger—is present in gelatine cultures than in those in agar, or on potato. The age of the culture also is a matter of importance. At the expiration of three days but little ptomaine is found, and he found it best to use old cultures, and states that the poisonous qualities are not diminished even when the cultures have been kept for weeks. The question whether the typhoid bacillus multiplies in the body of the animal in inoculation experiments is answered in the negative both by Sirotonin and by Beumer and Peifer. The last-named authors have made extended experiments with reference to this point, and find that instead of an increase, such as occurs when a microorganism which is pathogenic *per se* is introduced into a susceptible animal, the typhoid bacillus quickly dies out and disappears from the body of an animal into which it has been introduced in enormous numbers by one of the methods employed in their experiments.

(f) *The question of spores.*—Since the publication of Gaffky's memoir, in the second volume of the *Mittheilungen aus dem Kaiserlichen Gesundheits-amte*, his statements with reference to the formation of spores by the typhoid bacillus have been generally accepted, and have been confirmed by most of the observers who have followed him. Seitz, however, has not been able to convince himself of the presence of spores in his cultures. Buchner¹ and Michael² also report their failure to find spores.

According to Gaffky, spores are not formed at the room temperature. He has repeatedly searched for spores in gelatine and potato cultures grown at the room temperature, but without success. On the other hand, in cultures kept in the incubator at 37° C., spores were constantly found on the third and

fourth day, in unstained preparations, and also in stained cover-glass preparations. These spores were shining, round bodies, occupying the whole width of the bacilli, and situated at the ends of the rods. Only a single well-developed spore was observed in a single rod. At the opposite end of such a rod, however, one sometimes observes an indication of the formation of a second spore. But Gaffky says that he has never seen two perfectly developed spores in a single rod. When two rods are joined, no spores are found at ends which are coupled together, while each rod may have a spore at its free extremity.

The same thing is seen in the filaments (*scheinfäden*), which are made up of separate bacilli, each of which may contain a single spore. When a culture has been kept for a considerable time, one finds near the bacilli containing spores, free round spores, which show themselves to be such through their uniform size and refractive power, as well as through the fact that they do not take the aniline colors. Gaffky says:

"As the question of the formation of spores is one of high importance for the etiology of the disease, I have sought to clear up this point. I used for this purpose the excellent thermostat of d'Arsonval, by which it is possible to maintain precisely the same temperature for weeks at a time. The result of this research is that growth and spore formation undoubtedly occur at 42° C. (107.6°), although, perhaps, somewhat less vigorously than at the body temperature. From 30° to 40° appears to be the most suitable temperature for the development of spores. They are also formed at 25° although somewhat later, 20° C. appears to be the lowest point at which they form; at least I have at this temperature only found a few, not very well developed spores, at the end of eight days. Two days later the process was not much further advanced."

Gaffky also states that spores form in gelatine cultures, and upon blood-serum when kept in the incubating oven at a temperature of 30° to 40° C. Blood-serum containing spores, dried in a thin layer, was kept for three months, and then inoculated into flesh-peptone-gelatine with success.

I may say here that I have started fresh cultures of the typhoid bacillus from a liquid culture in veal broth which has been kept in a hermetically sealed glass tube for four months. I have not, however, been able to detect the presence of spores in this material. Seitz has started fresh cultures from a dried-up gelatine culture which had been kept for nearly eight months.

Bacilli dried upon silk threads were found by the author last mentioned to grow at the end of three weeks.

The interesting results obtained by Seitz in the cultivation of this bacillus at a low temperature may be mentioned here. Gelatine cultures placed in an ice-chest had, at the end of three weeks, a development about equal to that of a similar culture kept at the room temperature for four or five days. Gelatine plates kept at a constant temperature of 3° C. above the freezing-point, showed a decided growth at the end of forty-eight hours.

(g) *The thermal death point of the typhoid bacillus.*—Some three months since the writer commenced a series of experiments intended to fix in a definite

¹ Archiv f. Hygiene, vol. iii. p. 361.

² Fortschr. d. Medicin, 1886, No. 11.

way the exact degree of heat which is required to destroy each of the pathogenic microorganisms at present known to us. A detailed account of the results obtained will be given in a paper to be published in the July number of *The American Journal of the Medical Sciences*. I shall give at present, however, an account of these experiments so far as they relate to the typhoid bacillus.

In all of these experiments I have adopted ten minutes as the standard time of exposure to a given degree of temperature, which, in a series of experiments, is, of course, changed according as it is found to be too high or too low.

A fresh culture of the organism to be tested is introduced into capillary glass-tubes having an expanded extremity to serve as an air-cavity, by means of which the culture-fluid is drawn into or forced out of the capillary tube. This is readily accomplished by means of heat.

The glass tubes, hermetically sealed, are introduced into a vessel containing water, which is kept at a constant temperature by personal supervision, a Bunsen burner being the source of heat. A standard thermometer is placed in the vessel, and this and the capillary tubes are protected from the bottom of the vessel containing them by a thick plate of non-conducting material. A uniform temperature throughout the fluid is maintained by constant stirring.

After exposure for ten minutes to a given temperature the sealed extremity of the capillary tube is broken off with sterilized forceps and the contents are forced, by heating the air in the expanded extremity, into a test-tube containing sterile flesh-peptone-gelatine, which has been liquefied by exposure in a water bath to a temperature of 40° C., or below. The cotton plug is only removed for a moment in order to introduce the contents of the capillary tube, and in my extended experiments I have very rarely seen any accidental contamination. A rubber cap is next placed upon the open end of the test-tube, and the gelatine is spread in a uniform manner over the interior of the tube by the method of Esmarch.¹ This is accomplished by rolling the tube in iced water until the gelatine hardens. These tubes are then placed in a room or incubating oven, having a suitable temperature—20° to 22° C.—and are left until the question is determined as to the destruction of the vitality of the organism which has been introduced into them.

A control experiment is made in every case with material from the same culture which has not been subjected to heat. The control usually shows numerous colonies within twenty-four to forty-eight hours, but in the case of certain pathogenic organisms the development of colonies which can be recognized by the naked eye takes a longer time—e. g., erysipelas, mouse septicæmia; others, such as the tubercle bacillus and the gonococcus of Neisser, will not grow at all under these conditions.

As growth is, as a general rule, retarded by temperatures approaching that at which it is entirely prevented, it is necessary, when no evidence of growth is seen sooner, to keep the tubes for at least

a week. A negative result at the end of this time may be taken as evidence that the organism introduced into the tube was killed by the temperature to which it had been subjected.

I come now to speak more specifically of my experiments upon the typhoid bacillus.

As authors generally agree in the statement that the typhoid bacillus forms spores, and as my own previous experiments upon spore-bearing bacilli, and those of others, indicated that spores are only killed at a comparatively high temperature, I made first the following experiment, in which material from a pure culture in veal broth was exposed for the time adopted as a standard (ten minutes) as follows:

Exp. of Nov. 10. 50°, 60°, 70°, cont. In this and all subsequent records of experiments made, the figures in heavy type indicate that growth occurred; the figures in light type indicate the absence of any growth—i. e., the killing of the organism at the temperature indicated by the figures. It will be seen that at 60° or at 70° C. no growth occurred, while in the control tube, and in that at 50° C. (= 122° Fahr.) the typhoid bacillus grew abundantly. I may say here that my object has been to determine the lowest temperature which will insure the destruction of all germs of each species tested. I have not, therefore, considered it worth while in those cases in which only a few colonies have grown out, after some days, to count the number of colonies and record the same. This would involve a vast amount of work, and from my point of view such a record would have no special advantage over the simple record of growth or failure to grow. In the practical application of data of this kind in the disinfection of typhoid excreta, etc., it is evident that a few colonies, representing a few bacilli or spores, which have survived the temperature tested, are as potent for mischief as a larger number.

My stock for these experiments is from cultures brought from Europe by Dr. Bolton, and obtained by him in the laboratory of Professor Koch. I have repeatedly tested this stock by means of potato cultures, stained cover-glass preparations, etc., and it presents all of the characters assigned to the typhoid bacillus by Gaffky, by Eisenberg in his *Bakteriologische Diagnostik*, and by Flügge in his recent work, *Die Mikroorganismen*.

In fluid cultures and in potato cultures kept at the room temperature I have not been able to discover any spores, but in potato cultures kept in the incubating oven at 38° C. I have repeatedly seen spherical, highly refractive bodies at the ends of the rods, which appear to be spores, and no doubt correspond with the bodies which have been called spores by Gaffky and others. My only reason for hesitation in concurring in this opinion is based upon the fact that my frequently repeated experiments show that potato cultures containing these refractive bodies are killed by a temperature of 60° C. I have in no instance had any growth from potato cultures exposed to this temperature for ten minutes. At first I was disposed to think that this fact is fatal to the view that these refractive bodies at the ends of the typhoid bacilli are reproductive spores, for all spores which I had previously met with resist a much higher

¹ Zeitschrift für Hygiene, Bd. 1, Heft 2, S. 293

temperature than this. But, on second thought, I am not inclined to accept this inference without further investigation. It does not follow that, because the spores of several well-known bacilli resist a temperature of 100° for some minutes, all spores have a like resisting power. Indeed, we have heretofore recognized differences in the resisting power of those spores which are only killed at a comparatively high temperature, and it is quite possible that some spores are killed at a comparatively low temperature. My investigations, which are not yet completed, favor the view that this is the case, and that these refractive bodies are reproductive spores, notwithstanding the fact that their resisting power for heat is not greater than that of the bacilli themselves. I shall consider this question *in extenso* when my experiments upon the thermal death-point of other bacilli have been completed.

The experiments which I have made upon the typhoid bacillus up to the present date are recorded in the following table:

TYPHOID BACILLUS.
(Ten minutes exposure.)

Date.	Culture medium.	Experiments.	Remarks.
Nov. 10.	Veal broth.	50°, 60°, 70°, <i>cont.</i>	In oven at 38° for 48 hours.
Nov. 15.	Veal broth.	50°, 52°, 54°, 56°, 58°, 60°, <i>cont.</i>	Fluid culture of November 1st.
Nov. 30.	Potato culture.	50°, 55°, 60°, 70°, 80°, <i>cont.</i>	Culture at room temperature.
Dec. 4.	Potato culture.	60°, <i>cont.</i>	Culture in oven at 38° for 7 days.
Dec. 24.	Potato culture.	60°, 70°, 80°, <i>cont.</i>	Culture in oven for 10 days, then kept at room temperature for 15 days.
Jan. 15.	Potato culture.	55°, 60°, 70°, 80°, <i>cont.</i>	Culture in oven at 38° for 7 days.
Jan. 20.	Potato culture.	48°, 50°, 52°, 60°, <i>cont.</i>	Potato in oven at 38° for 10 days.
Jan. 22.	Potato culture.	50°, 60°, <i>cont.</i>	Potato in oven 7 days, then kept at room temperature 7 days.

An inspection of this table shows that no development occurred in any instance after exposure to a temperature of 56° C. and above. In one experiment (Nov. 30) growth occurred after exposure to 55° C., but in this case it was very much delayed; in the experiment of January 15, no development occurred after exposure to 55°. Differences of this kind, when we are on the border-line, are to be expected.

We may then safely say that the thermal death-point of the typhoid bacillus is 56° C. (= 132.8° F.).

A CASE OF POISONING BY THE HYPODERMATIC USE OF COCAINE MURIATE.

By J. HOWELL WAY, M.D.,
OF WAYNESVILLE, N. C.

ON March 15th, having been for some time engaged in studying the physiological and therapeutical effects

of cocaine on human beings, I concluded to make a personal experiment with cocaine administered hypodermatically—an experiment which proved a very dangerous one, and which came very near terminating fatally.

Without presuming to add anything to the already voluminous papers which have thronged the journals during the past two years, on the action of cocaine and its salts, I submit a report of my case, believing it may be of interest as the personal experience of a physician.

At 6 P.M. I injected a quarter of a grain of Squibb's hydrochlorate of cocaine into the dorsal aspect of the left forearm. In three minutes this was followed by a limited degree of anæsthesia in the integument for about two inches in each direction from the point of injection.

Notwithstanding the very superficial nature of this and of subsequent injections, the local anæsthesia was at no time marked—never becoming developed sufficiently to prevent a sensation of pain on puncturing or pricking the integument with the point of a needle.

No constitutional symptoms were manifest at the expiration of fifteen minutes. I now made another injection of a quarter of a grain of the salt at a point a few lines removed from the site of the former injection. Again fifteen minutes elapsed without there being any apparent increase in the degree of local anæsthesia present or the appearance of any visible constitutional effects.

After debating the question as to whether or not the dangers of cocaine-poisoning had been over-rated, and a query as to the purity of the salt used, I, emboldened by the apparent inertness of the drug, at 6.30 P.M. injected near the same points as before, half a grain more, making one grain taken in half an hour hypodermatically. In ten minutes from the time of the last injection constitutional symptoms began to be manifest. I became restless and disinclined to remain quiet, my respirations increased to thirty per minute, and grew shallow and sighing in character, while my pulse rose from normal (72) to 120.

Five minutes later I became convinced that I was poisoned, and perhaps might need assistance. I arose, and buttoning my coat about me, walked down a flight of stairs and a distance of two hundred yards to a drug-store. On walking in I endeavored to tell the druggist what I wanted, but was unable to collect words to express my ideas for about one minute, during which he had me sit down. The aphasia disappearing, I told him to bring ammonia and digitalis, and accompany me to my office. I then returned, walking along without any difficulty, greeting friends I met as usual, and experiencing only a sense of slight dizziness and some precordial oppression, which continued to increase.

It was now 6.50 P.M. Twenty minutes had elapsed since taking the half grain injection. My pupils were dilating slowly; mental faculties perfectly clear and collected; no pain in head or other part of body; respirations reduced to normal frequency, but very shallow and sighing; pulse 140, quick, feeble, and barely perceptible at wrist. I walked about the room for three or four minutes,

when I grew weak and exhausted, and was compelled to lie down on a lounge.

At 7.20 P.M. my condition was almost that of collapse. Mental faculties perfectly clear and natural; pupils widely dilated; mouth dry, and a sensation as of the presence of a foreign body in the pharynx; respirations shallow, sighing, and reduced to 11 per minute; pulse elevated to 180, very feeble, fluttering, and extinct at wrist; extremities cold; body was warm to the touch, but my own sensations were those of intense cold. I was placed in front of a large fire and my body enveloped in heavy woollen blankets while my feet and hands were briskly rubbed.

A sense of impending dissolution came over me—not a feeling of fear, but a conviction that my physical condition was such that death was almost inevitable. My mind remained perfectly clear, and I gave my attendants all directions as to my care. I took frequent doses of ammonia and digitalis—the former seemed to be of very great advantage.

At 7.30 P.M. my condition was worse, and myself and attendants were momentarily expecting my death. My extremities seemed to lose all power of either motion or sensation. I struggled against this with all my will-power, and would call for frequent doses of ammonia, which would give me (so it seemed) sufficient strength to move. Painful emesis occurred twice, each time being attended with the ejection of about $\frac{1}{2}$ of white, frothy matter which soon evaporated, leaving only a faint white residuum. Respirations were now only 9 per minute, and exceedingly shallow; carotid pulse faintly beating at 200; radial pulse entirely imperceptible; and no impulse of heart-beat felt on palpation. Mind still clear. Suffered no pain.

I remained in this state for about half an hour, during which, in addition to frequent small doses of ammonia and digitalis, I inhaled three drops of nitrite of amyl. A slight improvement in the cardiac action was now noted. Respirations increased to fourteen per minute, pupils contracted to normal, and skin became moist and warm. At 10 P.M. the radial pulse returned, was full, and reduced to 140. Respirations were of normal frequency, and of almost normal vigor. Improvement continued. At 11 P.M. respirations normal, pulse 120. Suffered at this time from a dull, aching pain in lumbar region of spine and sense of great weakness and prostration. Half an hour later very copious diuresis took place.

At 1 A.M. was entirely well save the feeling of exhaustion naturally following so great a derangement of the vital functions. Was now removed to my room, and slept soundly until 8 A.M. During the day I suffered much annoyance from the very dry state of my pharynx and also from muscular weakness. Both these inconveniences disappeared during the following night, and since then my health has been most excellent.

MEDICAL PROGRESS.

SUBIODIDE OF BISMUTH IN THE TREATMENT OF WOUNDS.—DR. SWEETMAN reports, in the *Canadian Practitioner* for April, 1887, his results obtained in the

use of subiodide of bismuth, as originally brought to the notice of the profession in an article by Dr. A. S. Reynolds, of Philadelphia, published in *THE MEDICAL NEWS* of October 9, 1886.

Its advantages as a dressing are:

1. That it is a reliable antiseptic.
2. That it is not easily volatilized, and when properly applied the dressing may remain untouched for several days.
3. That it has no objectionable odor.
4. That it produces no irritation.
5. That there is no danger from absorption, and is harmless even when taken by the mouth.
6. That if the subiodide of bismuth is used properly, the prognosis in every case may be certain cure in half the time, and with far better results than can be maintained by any other treatment he has seen employed.

IODOL IN DIPHTHERIA.—In order to test the statements of Dr. Mazzoni, Dr. L. L. Stembo, of Vilna, tried (*Proceedings of the Vilna Medical Society*, No. v., 1887, p. 114) the local use of iodol in seven cases of diphtheria, two of which were severe. The drug was applied either alone, in powder, or in the form of a solution (R Iodoli, \mathfrak{ss} ; liq. vini, \mathfrak{ss} ; glycerini, \mathfrak{z} ijss). All the patients recovered after treatment lasting from four to six days. The advantages claimed by Dr. Stembo for iodol are its complete harmlessness, its freedom from unpleasant smell or taste, the painlessness of its application, and the absence of any untoward secondary effects, such as loss of appetite, nausea, vomiting, etc.—*British Medical Journal*, April 9, 1887.

ABSORBENT CANTON FLANNEL.—ENGLAND, in describing antiseptic dressings which he prepares for use in the Philadelphia Hospital, describes as follows his preparation of canton flannel:

Under this term we use, in the Philadelphia Hospital, a canton flannel rendered absorbent by boiling in a 3 per cent. solution of caustic soda for $1\frac{1}{2}$ or 2 hours, until all the fatty matter in the fibres is decomposed, then washing in several portions of cold water, then macerating for 10 or 15 minutes the product in a 1.5 per cent. solution of hydrochloric acid, whereby any traces of free soda are neutralized, and the fibres of the goods are whitened; and, lastly, followed by several washings in water, wringing out with a machine and drying. This product has been found to be peculiarly serviceable in hospital practice as a cheap, efficient, and reliable substitute for all the minor cases for which at present the so-called patent lint is generally demanded; for example, in local applications of lotion of lead-water and laudanum, and as a dressing with various ointments upon chronic sores, ulcers, etc. The proof of its utility may be inferred from the fact that while we used, during 1886, 1500 yards of patent lint, we used, also, 2500 yards of this absorbent canton flannel. In cost it is almost one-half of that of patent lint.—*American Journal of Pharmacy*, April, 1887.

A FORMULA FOR THE USE OF PARALDEHYDE.—DR. ECCLES, of Brooklyn, in the *Reports of the New York State Pharmaceutical Association* for 1886, gives the following as a useful formula for administering paraldehyde:

The following is the formula that has so far given the

best results. If properly dispensed it will be perfectly transparent. To have it so care must be taken to see that the articles are pure and the *vials* into which they are put quite dry:

R.—Ol. amygd. dulc.,
 Paraldehyde āā ʒij.
 Chloroformi gtt. xij.
 Ol. cinnam. gtt. iij.—M.

Sig.—One-half at bedtime, the rest during the night if required.

This, of course, is designed for an adult so far as the dose is concerned. Children can be given it in proportion to their ages. In cases of strychnine poisoning this whole amount or even more might be administered at a single dose. It is said to be the only reliable antidote to strychnine. According to late reports from some investigators rabbits have been saved by its use after the administration of one or more fatal doses of this poison.

HEART-STRAIN AND WEAK HEART.—DR. BEVERLEY ROBINSON states in the *Med. Record* of Feb. 26, 1887, that in these cases he has had the best results from the administration of tincture of the chloride of iron, in moderate and frequently repeated doses continued for weeks and months, while the liver was gently stimulated by tablet triturates of calomel, gr. $\frac{1}{4}$ to $\frac{1}{2}$, morning and evening, or oftener. The usual heart-tonics have sometimes proved inefficient; again, they have been evidently useful. He does not approve of the use of digitalis in these cases, except in very moderate doses, combined or not with the iron tincture. If too much digitalis be given, instead of helping the patient it does him harm.

On several occasions, when digitalis had proved to be useless or injurious, he has had very excellent results from caffeine or convallaria. Certainly the latter drug is more easily tolerated by a sensitive stomach than digitalis is; and whenever the nervous supply of the heart is especially implicated, he believes that he secures more quieting effects from its employment. Among well-known cardiac tonics and stimulants for obtaining temporary good effects, at least, he knows of no drug quite equal to coca. Given in the form of wine or fluid extract, it does much at times to restore the heart-muscle to its former tone. He has obtained the best effects from the use of Mariani's wine. These results are attributable to the excellent quality of the coca-leaves and of the wine used in its manufacture. Of course, the good effects of any and all treatment will be closely allied with the stage of the disease when it first comes under observation. If the heart-muscle be healthy, with the exception of more or less loss of tonicity or contractile power, its complete integrity may be restored. If, on the contrary, the heart-fibres are already considerably stretched and the cavities dilated, while in some instances the patient may be restored to apparent health for a shorter or longer period, the probabilities are that ultimately renewed distress will be felt and further progress in the disease will take place.

MEANS TO DISGUISE THE ODOR OF IODOFORM.—*Pratique Médicale*, of March 1, 1887, gives the following various substances as useful in masking the odor of iodoform: 1. Several drops of the essence of bitter

almonds; tannin; a small quantity of balsam of Peru; a mixture of iodoform and the above may be made.

2. An emulsion of iodoform and the oil of bitter almonds, equal parts.

3. Iodoform 1 part.
 Powdered charcoal 2 parts.
 Sulphate of quinine $\frac{1}{3}$ part.
 Essence of mint $\frac{1}{10}$ part.

A DEVICE TO SECURE FIXATION OF FRAGMENTS IN COMPOUND FRACTURES.—DR. MOLLOY describes the following, as seen in Schede's wards at Hamburg:

The treatment of compound fractures presents some novel features. The wound or wounds are laid freely open, irrigated thoroughly with corrosive sublimate solution, 1:1000, all loose splinters of bone removed, fracture reduced, and fixation of the fragments secured by means of a little device of Dr. Hansmann, the first assistant surgeon. It consists of a small metal plate about half an inch wide and as long as is necessary, perforated with holes at short distances. It is laid upon the periosteum, and a screw inserted through one of the holes into the bone on each side of the point of fracture. Two of these little splints are usually employed in a fracture of a large bone, after which the immobility of the limb is secured in the usual way by splints; the wound being left open and treated antiseptically. The metal plate has the advantage over bone sutures in being much more easy and simple in its application as well as removal, and it secures and maintains the approximation and fixation of the fragments just as firmly.—*Lancet-Clinic*, April 16, 1887.

HYDRIODATE OF HYOSCINE IN KIDNEY DISEASES.—DR. TIRARD, in the *Practitioner* for February, 1887, reports his experiences with the following solution:

R.—Hyoscine hydriodatis gr.j.
 Aquæ destillatæ ℥ cc.

Hydriodate of hyoscine is a drug which can be used with perfect safety in cases of kidney disease where morphine is inadmissible. It is a drug which may give rest when other sedatives fail.

If used in two minim doses subcutaneously, it may give more satisfaction to the patient than to the attendants, since the unconsciousness may be accompanied by angry and combative delirium; should this occur it will probably be sufficient to diminish the amount employed.

It is very rapid in its action, unconsciousness following in from ten to twenty minutes, and the after-effects are of a soothing character.

Even when delirium is present in a violent form, it is followed by quiet sleep, and the patient, being unconscious, is much more refreshed than by a night of short snatches of sleep produced by chloral or bromide, and the result is a marked improvement in both aspect and temper. And lastly, no irritation is produced around the site of injection.

I believe that hydriodate of hyoscine will probably take a firmly established position as a sedative in cases where morphine cannot be employed.—*Medical Age*, March 25, 1887.

DISINFECTANTS AND THEIR USES.—DR. ALFRED CARPENTER delivered an address at the last monthly

meeting of the Association of Public Sanitary Inspectors, on "Theory and Practice as to Disinfection." He urged that sanitary inspectors, who have very great power if they use it carefully, should reason out the grounds of the application of any particular mode of disinfection, rather than give a blind obedience to a written order. With regard to smallpox, he pointed out that germs of living protoplasm in the breath of a patient will take root if immediately transplanted to the membrane of a susceptible person, but if floated about in the air for 100 yards they will lose their vitality. Isolation, with ventilation, as rapidly as possible, is necessary in such cases. For disinfecting the furniture of a house after infectious disease steam is preferable, and he advised all local authorities to provide themselves with the means of applying steam heat. Dr. Carpenter did not recommend carbolic acid as a disinfectant in cases of disease, for it has been found that the acid preserves the dormant germ from decay. This also holds goods of alcohol; the use of spirituous liquors as a protection against the evils of impure water is no protection at all. The same argument applies, though in a minor degree, to sulphurous acid. The best disinfectant is a solution of bichloride of mercury. It requires to be used with care, but it is rapid in its action, and so powerful that a solution of 1 part in 5000 of water will in fifteen minutes destroy every living germ, dormant or otherwise, with which it comes in contact. The best disinfectant for sewers is sulphate of iron. Dr. Carpenter concluded by saying that the lines on which disinfection should be carried out are: Ventilation, aerial disinfection by chlorine or steam, lime washing, washing floors and furniture with solutions of mercuric chloride; steam heat for clothing, furniture, etc.; and sulphate of iron or chloride of lime in adequate quantities for flushing. If these means are effectively applied infectious diseases will be completely banished from our midst, and any local authority which now allows of their continuance is doing defective work.—*British Medical Journal*, April 9, 1887.

FATAL RESULT OF LARGE DOSES OF THALLIN.—PROFESSOR EHRLICH, who has had very good results from thallin in typhoid fever, has had the candor to report a case (*Münchener med. Wochenschr.*, No. viii.) which ended fatally under repeated progressive doses—namely, 0.08 up to 0.58 gramme (one and a quarter grains to nine grains nearly)—of thallin tartrate. The necropsy showed the lesions of typhoid fever in the healing stage, cardiac hypertrophy and dilatation, fresh mitral endocarditis, and hemorrhagic infarcts in the renal papillæ, the last-mentioned being, as shown by experiment, a characteristic sign of thallin poisoning. Ehrlich assumes that the cardiac condition caused defective excretion and consequent accumulation of thallin. This danger may be completely avoided by fixing as the maximum dose for hourly administration 0.2 gramme of the tartrate (three grains). In the progressive administration of thallin very small doses are used at first—namely, 0.07 or 0.08 gramme—and this amount is increased daily by $\frac{1}{100}$ gramme. Heart-failure of any kind is a contraindication of thallin treatment; so are the various forms of kidney disease, and also cases which resist the influence of small doses. Professor Ehrlich deserves our sympathy and respect

for his conduct in this case, which will have great influence upon the use of thallin in this country.—*British Medical Journal*, April 9, 1887.

TREATMENT OF ACNE.—BULKLEY, as quoted by the *Monatshfte für Praktische Dermatologie*, No. 6, 1887, gives the following prescriptions:

For *sebacea oleosa* of the face the following lotion:

R.—Potass. sulphat.,
Zinci sulphat. āā 3 i.
Aq. rosarum 3 3¼.

Each of the salts used should be dissolved in half the fluid and the solutions mixed.

Repeated bathing with weak solutions of soda (1 or 2 to 600), followed by the application of an alcoholic solution of corrosive sublimate (1 to 200 water and 1000 alcohol) generally suffices to lessen the excessive formation of sebaceous matter.

Weak solutions of ergotin and belladonna or of atropia are useful when sublimate does not agree.

Seborrhæa of the scalp is treated by the following lotion:

R.—Tinct. canthar. 3 2 to 5.
Tinct. capsic. 3 2 to 5.
Tinct. nuc. vomic. 3 3¼.
Olei ricin. 3 2.
Olei lavand. ℥ 30.
Spirit. dilut. ad 3 3¼ or 4.

M. Fiat lotion.

Sig. External use only.

Acne sebacea cerea of the face may be treated by this ointment:

R.—Bismuth. subnit. 3 i.
Ung. hydrarg. oxyd. rubr. . . . gr. 30.
Ung. hydrarg. præcip. alb. . . . 3 2.
Ung. rosat. 3 6.

M. Fiat unguentum.

A NEW METHOD OF TAKING TEMPERATURE IN CHILDREN.—FILATOFF writes as follows in the *Archiv f. Kinderheilkunde* on this point:

The difficulties in taking the temperature in children are but too well known, and an important symptom often fails of accuracy of record, either because the child offers too much opposition, or because the mother cannot endure the crying of the child for the quarter of an hour during which the thermometer must remain in the axilla, or the five minutes during which it should be kept in the rectum. In cases of this kind the author recommends the use of a warmed thermometer which need be kept only for a moment in the axilla, and with which the fall and not the rise of the column of mercury is to be observed. The result will not vary by more than one or two-hundredths of a degree from that which is obtained by the ordinary method. The thermometer may be warmed either by rubbing the bulb in the bare hand, or in a handkerchief, and 42° to 43° C. may be quickly indicated. It should then be quickly placed in the axilla and allowed to remain one or two minutes. The author is satisfied with the experience which he has had with this plan up to the present time.

A METHOD OF PREPARING BORATED AND SALICYLATED COTTON.—In an article on "Antiseptic Cottons

and Gauzes," in the *American Journal of Pharmacy* for April, 1887, ENGLAND describes his methods as follows:

Borated Cotton.—Since, according to the Pharmacopœia, boric acid is readily soluble in 3 parts of boiling water and 25 parts of cold water, it is evident that hot water will readily dissolve 15 per cent. of boric acid, and precipitate a very large proportion on cooling, and, if purified cotton be treated with an equal weight of a hot aqueous solution of the acid of that strength and dried, it will, of necessity, contain 15 per cent. of the acid; a very desirable strength to insure its antiseptic properties. But in practice it will be found that cotton readily absorbs from about four to five times its weight of water; the exact proportions varying with the absorbency of the cotton, the quantities of antiseptic cotton made at a time, the manner of impregnating with the medicated solution, and the degree of subsequent expression. Hence it is better to make the water four or five times the weight of cotton used, impregnate in thin layers in a flat, open vessel, and express moderately, or in such a manner that after all the cotton has been treated there will be no medicating liquid left. Borated cotton thus prepared, has the acid intimately incorporated into its fibres, and is free from loose particles of crystals among its meshes.

Boric acid . . .	80 gm. (2 oz. av. and 360 grs.)
Boiling water . .	1814 " (4 lbs. av.)
Absorbent cotton .	435.5 " (1 lb. av.)

Dissolve the acid in the boiling water, impregnate the cotton, express and dry by exposure to the air or slight heat. Borated cotton thus made contains exactly, in the finished product, 15 per cent. of its weight of acid. The use of a Troemner solution balance will greatly facilitate the weighing of quantities in this, as well as in all other formulæ herein given.

Salicylated Cotton.—This is generally made 10 per cent. in strength, with water, alcohol, and a small proportion of glycerine to prevent the shaking out, after drying, of the crystals contained in the interstices of the fibres. The following is the formula used:

Salicylic acid . . .	57 gm. (2 oz. av.)
Alcohol	453.5 " (1 lb. ")
Hot water	2268 " (5 " ")
Glycerine	57 " (2 oz. ")
Absorbent cotton . .	453.5 " (1 lb. ")

Mix the acid, in a porcelain or Wedgewood mortar, with the glycerine, dissolve with added alcohol, place the solution in a large, flat, open vessel, and lay upon the surface of the liquid the cotton in thin layers. After standing for ten minutes in this liquid, and absorption is completed, remove, express, and lay aside to dry upon a frame. The method of expression may be with the use of the hands, but a better way is between the open rollers of a clothes-wringer so provided that they are not too tightly screwed together. Pilcher observes that the antiseptic qualities of this cotton may be still further enhanced if, before using, a thin layer of it be dipped in a 10 per cent. solution of the acid in glycerine, applying this to the wound first, and then following on top with a thick layer of dry salicylated cotton, sufficiently wide to extend beyond the outer limits of the wound on all sides.

PICRATE OF AMMONIA IN MALARIAL DISEASE.—DR. H. MARTYN CLARK, of the Amritsar Medical Mission, Punjab, has treated no fewer than 10,000 cases of malarial diseases with picrate of ammonia, and in half the cases he has kept a record. In nine cases out of 5000 did the picrate fail, and in these quinine cured at once. The usual dose is from one-eighth of a grain to one and a half grains four or five times a day in pill. Half a grain is a fair average dose. Thus given the result is soon visible. In the great majority of the cases treated, one-half grain doses in the interval prevented the recurrence of the next attack of the fever, while in about twenty per cent. of the patients two or three attacks followed before the fever ceased. In only one case of quartan ague, despite large doses of the salt, the fever recurred for six periods, gradually diminishing in intensity, and then yielded to it. It is equally successful in all the forms of ague, but it is a curious fact that the cases in which it failed to cure were all of the tertian variety. Dr. Clark has also employed this agent in the treatment of twenty-five cases of malarial neuralgia of various nerves, six cases of malarial headache, and one of malarial colic. In all these instances it cured completely and speedily. In addition to being cheaper and given in smaller doses, picrate of ammonia does not produce the unpleasant effects that quinine does, such as headache, deafness, tinnitus, etc.; nor does it, like quinine, disorder the digestion or cause nausea, as quinine does in India.—*Chemist and Druggist*, March 19, 1887.

THE MICROBE OF TYPHOID FEVER.—At a recent meeting of the Société des Hôpitaux, M. Chantemesse made an interesting communication concerning the morphological and biological characteristics of the typhoid microbe. The sporulation of this microbe takes place between 19° and 48° C. (67° to 104.4° F.). It develops in water, even if sterilized. At a temperature of 45° C. (113° F.) the cultivations live for several days; they are destroyed by boiling. This microbe retains its vitality in damp ground. Corrosive sublimate (1:20,000) and sulphate of quinine (1:800) destroy it. Carbolic acid (1:400) has no effect on it; hydrochloric acid is also inert; therefore, the acidity of the stomach is not inimical to this microbe.—*British Medical Journal*, April 9, 1887.

ORDINARY PRECAUTIONS IN THE CARE OF THE EARS.—HARTMANN, of Berlin, in a recent work on otology, gives the following advice:

Under ordinary conditions, the healthy ear does not need to be protected from cold; only during extreme cold or stormy or rainy weather ought cotton-wool to be inserted, into children's ears especially. The same precaution must be taken in the case of every ear predisposed to inflammation. All persons whose membranæ are perforated ought to protect their ears with cotton-wool. The entrance of cold fluids into any ear must always be prevented; and so, while bathing or diving, the ear ought to be plugged. Patients with perforations of the membrane should be very careful in this respect, as violent inflammation may be caused by the entrance of cold water.—*Bristol Medico-Chirurgical Journal*, March, 1887.

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CEREBRAL LOCALIZATION AND CRANIAL TOPOGRAPHY.

THAT the subject of cerebral localization is not only not exhausted, but that the threshold of its investigation has been scarcely more than passed, is indicated by the appearance of a paper of unusual interest, by VICTOR HORSLEY, in the current number of *The American Journal of the Medical Sciences*. This paper is modestly termed "A Note on the Means of Topographical Diagnosis of Focal Disease Affecting the so-called Motor Region of the Cerebral Cortex." It is a contribution which will prove equally valuable to the surgeon and to the neurologist, being a summary of the means adopted by the writer as topographical guides to definite portions of the brain. Its value consists largely in that it is not simply a review of the literature of the problem under discussion, but contains the results of experiment, observation, and of clinical and surgical experience.

Already to Horsley we owe not only valuable physiological and clinical work, particularly in connection with the subject of cerebral localization, but also to him, in large part, is due the credit of a few of the most brilliant operations that have been performed within the last few years, among which several cases of cerebral tumor successfully removed, after having been localized by the aid of the rules given in this paper, are notable.

Every one who has had to deal practically with the subject of cranio-cerebral topography knows something of the difficulties of exactly locating on the skull the relative position of the parts beneath, especially when those parts are of the dimensions of a fissure or of a single convolution. As useful as the older methods of Broca, Championnière, Seguin,

and others have been, they have not fulfilled all the requirements of great exactness and easy adaptation. Horsley gives some new and valuable suggestions.

Taking up the surface markings of the head, he regards first the sutures, next the eminences, and lastly the temporal ridges, giving methods so simple and easy of application for recognizing and determining these landmarks that nothing is left to be desired. The importance of the temporal ridges is well shown. He recognizes two of these, the first or lower, marking the upper border of the attachment of the temporal muscle; the second or upper, marking the attachment of the temporal fascia. The ridge of the temporal muscle can be most readily determined by telling the patient to shut the mouth firmly. That of the fascia in the majority of instances can be felt by palpation. The methods of determining the coronal and parieto-squamous sutures as given are comparatively easy.

Horsley wisely, we think, adopts the plan of Thane, of University College, London, for locating the upper end of the fissure of Rolando. It consists in taking the length of the middle line of the head from the root of the nose to the occipital protuberance, and then by halving the result the centre of this line is obtained. The upper end of the fissure of Rolando will be found in adults to be situated half an inch behind this centre point. He describes a very simple instrument of soft iron, consisting of a ten-inch strip, one centimetre broad, from the middle of which branches off another strip about six inches long, the two making an angle in front of sixty-seven degrees. This instrument is used by placing the arm upon the middle line of the head, which has been previously marked; the angle between the arms is then made to coincide with the theoretical situation, according to Thane, of the upper end of the fissure of Rolando; and a line drawn from the anterior border of the short arm will give the situation of the fissure for the upper two-thirds of its course.

The limitation of the areas of the representation of movements of different parts of the body, in certain cerebral gyri, to which the paper of Horsley is confined, is very carefully described. The results of some new investigations by the author and several colleagues are given in various places.

An important fact and suggestion are contained in the following quotation: "It may be advisable, moreover, to point out that, as the representation of one and the same function may extend over and beyond this or that sulcus, as has been already mentioned, it is advantageous mentally to subdivide this region into horizontal levels, for the variation in the representation of the function will be found to be greatest in passing over the 'motor' area from above

down. In other words, the nature of the function of the convolution bordering the longitudinal fissure is more different from the function of the convolution forming the upper edge of the Sylvian fissure, than is the function of the anterior third of the so-called motor region from the posterior third."

The area of the cortex for the representation of the movements of the face and throat is first carefully given. Dividing the brain horizontally, as above indicated, a line drawn through the lower end of the intraparietal sulcus and the genu of the fissure of Rolando bounds this district above, the fissure of Sylvius limits it below, and it extends from the precentral sulcus in front to a theoretical extension of the intraparietal sulcus to the Sylvian fissure behind. In the upper part of this facial area the movements of all the groups of muscles of the lower face are represented. The anterior third of the lower portion of this facial area is the seat of representation of the movement of complete adduction of the vocal cords, together with the associated movements of other parts of the throat; the hinder two-thirds is the seat of the representation of the opening and shutting movements of the mouth, with protrusion and retraction of the tongue and the floor of the mouth. The seat of representation of movements of the upper limb is just above the facial area. In front the upper limb region extends into the middle frontal convolution for about its posterior fourth. Behind it extends across the ascending parietal convolution. The shoulder is centred in the upper part of the area, the elbow next below and posteriorly, the wrist next below and anteriorly; the fingers next below and anteriorly; the thumb lower and posteriorly. Above this region for the upper limb, which has for its upper boundary the superior frontal surface sulcus, is first an area where representation of the upper limb and that of the lower limb are absolutely blended, a most interesting zone. The seat of representation of the lower limb only, the primary movement of which part is that of the hallux or great toe, is immediately in front of the upper end of the fissure of Rolando, but it is also continued over the margin of the hemisphere into the paracentral lobule.

That the paper of Horsley is a distinct advance in the work done in cerebral localization and cranial cerebral topography is shown in many ways; for example, in the attention which he pays to the relations of certain parts which ordinarily have been neglected by those who have written upon this subject. Thus, he shows the importance of the precentral or vertical sulcus as a cortical landmark, as it divides two convolutions of very different functions, and as it has on either side of it convolutions in which most extensive representation of movement exists. This sulcus, as a rule, reaches to about the

centre of the fissure of Rolando, and from it diverges forward about opposite the superior temporal ridge. Horsley also shows the topographical value of various other sulci and convolutions which have hitherto received but little attention—the superior frontal, the inferior frontal, and the intraparietal sulci, the various frontal convolutions, and the marginal convolutions, for example.

Valuable as is the paper of Horsley, here and there are points which may be criticised, but they are only minor points. In speaking of the intraparietal sulcus or interparietal fissure, he does not indicate very clearly the most usual direction of this fissure, as well as its variations. He speaks of it soon after its beginning as tending to leave the fissure of Rolando, thereby forming the ascending convolution, the summit of which is widened so as to become the superior parietal lobule. He pays no attention to the so-called retrocentral fissure, which is so very constant in the human brain, and which is regarded by some as a secondary extension upward of the beginning portion of the interparietal fissure, and by others, as Wilder for instance, as a distinct fissure. In a foot-note, however, he says that the commonest line of the intraparietal sulcus has yet to be determined, and the real breadth of the ascending parietal gyrus consequently remains also unknown. It is possible also, it appears to us, that he takes somewhat too strongly the position that the mapping out of the localities of function has nearly all been done by the accurate observations of experiments on the lower animals. It seems scarcely strictly true, in view of the labors of Jackson, Charcot, and others, to say that we owe nearly all we know of the functions of the different parts of the cortex cerebri to experiments upon the lower animals.

The paper is illustrated by numerous diagrams, and by two photographs from cadavers, the first of these showing a head from which the scalp has been removed opposite the so-called motor region of the brain; the second, with the convolutions of the same region exposed, and both so marked as to indicate clearly the relations of certain fixed and detectable points and lines of the skull surface to the fissures, sulci, and convolutions beneath. The whole paper is an admirable illustration of a combination of scientific investigation and the adaptation of such investigation to strictly practical purposes, and will form an indispensable aid to all laborers in the field of cerebral topography.

THE TECHNIQUE OF ANTISEPTIC MIDWIFERY.

WHEN one recalls what Semmelweiss accomplished forty years ago in the Vienna Hospital, and when one reads of the condition of the Maternité before Tarnier was elected to its wards, and sees now the

wonderful immunity from disease of the puerperal patients in that institution, it is not surprising that the means by which these extraordinary results have been accomplished have excited such great enthusiasm that their application has been carried to immoderate lengths. It was at one time possible, in some of the large lying-in hospitals of Europe, to witness the strange spectacle of a woman in labor, shorn of her pudendal hair, douched from time to time with strong antiseptic solutions, until finally the child emerged from the vagina, its outlines dimly discernible through a mist of carbolyzed spray, while an assistant, robed from neck to heels in a linen gown, stood ready to clap an antiseptic dressing over the vulva, which yawned to admit the invading hosts of deadly parasites with which the atmosphere was everywhere impregnated.

It is little wonder that there was a tardy acceptance on the part of general practitioners of the doctrine of the causative relation of pathogenic micro-organisms to puerperal fever, for the admission of such a theory seemed to demand the adoption of preventive measures which were impossible of general application in ordinary practice. The reaction from these extreme measures soon began, however, as the conviction dawned upon the professional mind that the greater part of this germicidal artillery should be turned upon the physician rather than upon the patient or the infant just emerging from what had been an air-tight sac. This conviction has been steadily gaining ground, until now the technique of antiseptic midwifery has been so simplified that its adoption is easy under any circumstances, either in private or hospital practice. More and more is the disinfection of the attendants becoming the cardinal point, while the advantages of non-interference with the parturient and puerperal female are becoming every day more evident, unless, indeed, there should be some special indication for the energetic disinfection of the parturient tract.

SZABÓ reports in the last number of the *Archiv für Gynäkologie* the results obtained in the Lying-in Hospital of Buda-Pesth, where, of 2629 confinements, the deaths from sepsis numbered only 8, or 0.3 per cent., with this simpler system of antiseptics in obstetrics. In this hospital vaginal injections are not employed at all in ordinary cases, but the hands of the attendants are thoroughly disinfected with a corrosive sublimate solution, 1 : 1000; while a solution of half that strength is used to cleanse the external genitals of the patients.

It is important to call attention to the possibility of attaining excellent results in obstetric practice with very simple precautions against puerperal infection, for such knowledge must hasten the universal adoption of antiseptics in general practice, even in the country, where the boasted purity of the air

is yet supposed to give immunity from puerperal fever, although the fallacy of this supposition has been frequently demonstrated. Every rural physician must fully realize that he, as well as his city brother, may at any time have touched a few drops of pus or decomposing blood; that he may have placed his hand upon an erysipelatous skin; upon the dried sputum of diphtheria; or upon a few flakes of the desquamated skin of scarlet fever, and that the next woman in labor who is unfortunate enough to have him as an attendant, may easily fall a victim to his want, not of ordinary, but of absolute cleanliness. With a knowledge of the dangers that surround a parturient woman, and possessing the means of neutralizing them to a great extent, it surely cannot be long before there will be no one so indifferent to the welfare of his patients as to subject them to risks that might easily be avoided by using the few and simple precautions that constitute the most recent and admirable plan of antiseptics in obstetrics.

HOW EARLY IS THE FETUS VIABLE?

HITHERTO obstetricians have generally agreed that the foetus is first viable when seven months of intra-uterine life have been completed. It is true that in rare instances a foetus born in the seventh month has lived—that is, before the generally admitted time of viability—but these exceptions were so rare that they were not regarded as invalidating the rule; indeed, a child born even at the completion of seven months has only a relative viability, its chance of living being much less than if birth had been delayed. TARNIER, in the second part of his work upon obstetrics, asserts that as a certain number of children born at six months, or six months and a few days, can by means of the couveuse and gavage be raised, the time when the foetus becomes viable should be fixed at six months.

The method of gavage consists in feeding the child through a urethral catheter of red rubber introduced into the stomach. The frequency with which the operation is repeated depends upon the quantity of food taken, but in general two drachms of milk every hour will be advisable, if the infant is very small and much premature.

AN OLD TREATMENT REVIVED.

In the March number of the *Revue Médico-Chirurgicale des Maladies des Femmes*, we find it stated that COUPEY has recently used a crayon of nitrate of silver placed in the uterus, as a remedy for metrorrhagia. This treatment was successfully employed by him in two cases, but the editor of the journal regards the method as very painful, and liable to cause dangerous pelviperitonitis.

This practice is by no means new, for it was

employed twenty-five years ago, by the late Sir James Y. Simpson. Our own experience with it has been confined to a single case, in which its application was followed by such grave metrorrhagia that we never felt disposed to try it again. If the solid nitrate of silver thus left in the uterine cavity cures any cases of metrorrhagia, it is only one variety of the affection which is amenable to the remedy—that which is caused by fungoid disease of the endometrium, and surely there are other therapeutic plans less painful and perilous which may be followed.

THE President, in accordance with the provision made in the Sundry Civil Appropriation Bill, passed at the last session of Congress, has appointed Surgeon George M. Sternberg, U. S. A., to investigate the merits of inoculation for the prevention of yellow fever, as practised in Mexico and Brazil. The President is to be congratulated on having selected for his appointee a scientist who is in every way so admirably qualified to conduct the contemplated investigation.

THE Governor of Sonora last Tuesday telegraphed a denial of the existence of cholera in Mazatlan and Guayamas.

THE term of service of Surgeon-General Gunnell, as Chief of the Bureau of Medicine and Surgery of the Navy, expires in March, 1888.

THE Association of Genito-Urinary Surgeons has been recently formed, and will hold its first meeting at Lakewood, N. J., on May 17th and 18th, with Dr. E. L. Keyes, of New York, as temporary chairman, and Dr. R. W. Taylor, of New York, as Secretary. The Committee of Organization consists of the above officers with Drs. A. T. Cabot, of Boston; C. H. Mastin, of Mobile; J. N. Hyde, of Chicago; F. R. Sturgis, of New York; and J. W. White, of Philadelphia. The programme for the meeting includes a number of very attractive papers.

SOCIETY PROCEEDINGS.

NEW YORK SURGICAL SOCIETY.

Stated Meeting, April 13, 1887.

LEWIS A. STIMSON, M.D., IN THE CHAIR.

CASE OF REMOVAL OF BOTH PAROTID GLANDS.

DR. WYETH presented a patient from whom he had removed round-celled sarcomata of both parotids. [The case was reported at length by Dr. Wyeth, in a paper on "Ligation of the External Carotid Artery," published in THE MEDICAL NEWS of March 19, 1887, p. 313.] The main facts were as follows: Z. M., æt. forty-seven, began, about sixteen months ago, to notice

enlargement of both parotids, which continued until her admission into Mount Sinai Hospital. She was strongly advised *not* to have an operation performed, and was told that, even if she survived, facial paralysis would result, but she insisted on being relieved. The right external carotid and superior thyroid were tied, and the neoplasm on the corresponding side was then dissected out. Three months later the more extensive growth on the opposite side was removed with great difficulty. The patient made a good recovery. A careful examination of both tumors was made by a competent microscopist, who pronounced them to be typical round-celled sarcoma. Attention was called to the fact that the patient had facial paralysis on both sides, more marked on the left. She could not close her eyes completely, but there was no keratitis. She was much troubled with dryness of the mouth, and had been advised to use olive oil, which had benefited her. There was no trouble about her nourishment, as she was restricted mainly to liquid diet. There was slight motion of some of the muscles on the left side of the face, but it was difficult to tell whether it was the group supplied by the motor branch of the fifth nerve, or those supplied by branches of the facial. The patient had no pain, and could talk very well.

In reply to a question from the President, Dr. Wyeth stated that the patient could chew without much difficulty, and was not obliged to push the food between her teeth with her fingers.

DR. ABBE asked if it was possible during the operation to distinguish the divided nerves at the edges of the tumors: could the opposite ends have been united by sutures, since the gaps left after the removal of the neoplasms could not have been very wide?

DR. WYETH replied that he saw the main branches of the facial nerves, but if he had stopped to suture the ends, the operation would have been prolonged, and there would have been no hope of the patient surviving.

CASE OF RUPTURE OF THE QUADRICEPS EXTENSOR TENDON; PERFECT RECOVERY AFTER SUTURING OF THE DIVIDED ENDS.

DR. MCBURNEY presented a patient who, two years before, had slipped while lifting a heavy packing-box from a truck; the edge of the box struck him just above the patella, causing a rupture of the quadriceps tendon near its insertion, but without any external wound. A transverse incision was made across the joint above the patella, and the capsule was found to be extensively lacerated on either side of the bone, while there was a quantity of coagulated blood within the joint-cavity. The fibrous fringes and the torn ends of the muscles were turned inward. The latter were excised, the rent in the capsule was closed with catgut, and the ends of the tendon were united and kept in close apposition by "quill-sutures," which were secured by doubled silver wire, passed through the edge of the patella. A plaster dressing was applied, and the wound healed quickly, the recovery of motion being slow, but eventually complete. Now, there was apparently no difference between the two limbs. The patient refused to allow the application of passive motion, yet the result had been perfect.

In reply to questions, he explained that the quills

(which were pieces of rubber tubing) were placed transversely, one two inches above, and the other about two inches below, the incision; that the inverted fibrous strips lay upon the torn muscle; and that he had never heard of any record of a similar operation.

DR. MARKOE said that Dr. Weir had had two cases in which the lesion was the same as in the case described, and that he himself had observed one.

THE PRESIDENT remarked that he had had a patient who had long before ruptured both quadriceps tendons. Although reunion failed, the patient, who was a laboring man, was able to attend to his work. He could ascend a ladder by aiding himself with his hands, and keeping his knees extended, and could stand without difficulty, as long as he kept his legs straight, but as soon as he bent his knees he would fall.

DR. SANDS thought that the operation performed by Dr. McBurney was undoubtedly the proper one; he believed that it had been done before, and that Maydl had reported a successful case in the *Zeitschrift für Chirurgie*.

DR. MARKOE asked if the separation occurred close to the patella.

DR. MCBURNEY replied that it took place as near as possible to the bone; there was a gap of one and one-half or two inches between the patella and the torn end of the tendon.

DR. BRIDDON read the following paper on

EXTRAPERITONEAL RUPTURE OF THE URINARY BLADDER.

During my last service in the Presbyterian Hospital, in the city of New York, the two following complicated cases of rupture of the bladder came under observation:

Case I.—Reported by Dr. F. W. Shaw. The patient, a man thirty-three years of age, was admitted Sept. 3, 4 P. M. He was engaged, with several others, carrying a stone weighing 1600 pounds, when he fell accidentally, striking his right hip upon the ground. His companions losing control of the stone, it fell upon the right side of his pelvis. When seen by the ambulance surgeon, he was in a condition of very pronounced shock; there was a slight amount of blood oozing from the meatus urinaris. Examined one and a half hours after the accident, it was ascertained from the patient that he had emptied his bladder three hours before he was injured. There was a contusion of the right hip posteriorly, and an abrasion on the left; there were some dulness and fulness in the right inguinal region. He complained of pain and tenderness over the sacro-iliac junction and over the pubis. It was thought that when pressure was made over both ilia, that the right could be appreciably approximated to the median line. The introduction of a soft gum catheter gave exit to an ounce and a half of bloody fluid. A little later a silver catheter was introduced into the bladder. It was noted that its point did not rotate as freely as it should, and it gave exit to one ounce of the same kind of fluid.

Operation was performed by Dr. Briddon four and a half hours after the accident. Strict antiseptic precautions were used; the pubes and perineum were shaved, scrubbed, irrigated with solution of mercuric chloride, and then wiped over with an ethereal solution of iodoform. When under the influence of ether, an incision three inches long was made in the median line imme-

diately above the pubes. When the subperitoneal fascia was exposed, its meshes were found infiltrated with blood; and on separating this with fingers and forceps, a large cavity was opened in the prevesical space. It was occupied by a considerable amount of bloody fluid that separated the anterior wall of the flaccid bladder from the posterior surface of the pubis. There was found an oblique fracture of the descending ramus of the left pubis, and a second fracture through the body of the right pubic bone; the bones were locked immovably, and their altered relations could not be restored; some small detached fragments were removed; the muscular and aponeurotic structures connected with the rami were torn, and there was no wound of the peritoneum. After careful and prolonged sponging, and the use of large retractors, it was possible to detect a long linear slit. Commencing in the upper and outer wall of the prostatic urethra, and passing up into the anterior wall of the bladder, it was estimated to be about one and a half inches in length. With some difficulty a silver catheter was introduced through the urethra and into the bladder, and was secured in position; a large rubber drainage tube was placed in the lower end of the abdominal incision; its point in contact with the laceration, and the remainder of the cavity was filled tightly with iodoform gauze. The patient was then placed in bed and surrounded with hot bottles. Temperature three hours after operation, 101° F.; reaction favorable.

4th. Temp. 100°. Considerable discharge through the gauze packing, which acts as an admirable drain. Several ounces of urine passed through the catheter, amber in color, acid, and slightly albuminous; contained granular and hyaline casts.

5th. Temp. 99°. General condition good; takes enough Magendie's solution to control what slight pain there is, and lithia water for a drink.

8th. Wounds dressed; the silver catheter was removed, and replaced by a rubber one; the prevesical wound was irrigated and filled with fresh gauze.

15th. No bad symptoms have presented; his general condition has steadily improved, but during the night the catheter failed to drain, and the urine overflowed through the wound above the pubes; on removing the catheter its lumen was found closed with calcareous deposits; it was determined to use the instrument only when a desire for urination existed.

23d. The bladder will now hold several ounces of urine, but unless the catheter is used frequently it will come through the wound; he complains of a good deal of pain in the penis, and especially in the corona.

Oct. 6. A small piece of semi-detached bone was removed from the right pubis.

19th. Two-thirds of the urine now passes through the urethra, the remainder through the abdominal wound; there is some irregularity or distortion in that portion of the urethra immediately anterior to the neck of the bladder, and it is deemed proper to introduce a conical sound every few days. The amount of urine passing through the wound gradually diminished, and finally ceased; he was discharged from the hospital in the last week in November. A small fistulous track leads from the lower end of the suprapubic incision downward and backward about three inches, and which will probably require a counter-opening in the perineum.

This patient was then presented for examination seven months since the accident occurred. There is a small sinus in the lower end of the abdominal sinus that has not discharged anything for the past week. He was advised to pass a large-sized sound occasionally, to counteract a disposition to lateral deviation of the infrapubic urethra, caused by displacement of the pubic arch, and No. 29 F. passes with ease. He has had no erection since the accident and I am not surprised, for the damage done to the soft structures was very great, and has, probably, implicated the nerve supply.

Case II.—Reported by Dr. A. S. Hooker. Patient aged forty-two years, a native of Ireland, married; engine wiper; a man of large frame and marked muscular development; good previous history, except an addiction to moderate indulgence in alcohol. He was cleaning a locomotive on the elevated railroad, when another engine was backed down, the buffer of the moving engine striking him on his right hip, and throwing him into violent contact with the buffer of his own engine, which struck him upon the abdomen; he had emptied his bowels and bladder half an hour before the accident.

When seen by the ambulance surgeon, December 2, 1886, almost immediately after the accident, and on one of the coldest nights of the season, the patient was suffering from shock, and complaining especially of pain in the right hip. As it was impossible to make a thorough examination where he was, he was at once transported to the hospital, where he arrived at 10.10 P.M.

On admission, his condition had improved under the influence of stimulants. There were found abrasions over both ilia; pain referred to right hip-joint, and increased by movements imparted to the limb of that side; there were no signs of fracture of the cervix; he experienced a desire to urinate, but was unable to do so. A soft-rubber catheter passed between nine and ten inches, when, after slight resistance, it entered a cavity, and gave exit to three ounces and a half of dark, bloody fluid; some hypogastric distress he had complained of was relieved by this. On percussing the abdomen, a somewhat triangular area of dullness was made out, situated to the right of the median line, its base corresponding to Poupart's ligaments. Shortly after this examination, the patient again complaining of pain, the catheter was passed, and less than an ounce of bloody fluid came away; withdrawing the catheter slowly, a point was reached when the dropping ceased, and on again withdrawing, until the eye of the instrument was nine inches and a half from the meatus, there was again a discharge, drop by drop.

Operation performed at 2.30 A.M., by Dr. Briddon; the night was bitterly cold, and it was found impossible to make the temperature of the amphitheatre comfortable to those who were warmly clad, the patient was, however, well covered with blankets, except in the parts to be operated upon; he had been prepared by scrubbing, washing, antiseptic irrigation, and the local application of ethereal solution of iodoform, and was under the influence of an anæsthetic. A staff was introduced without any difficulty into the bladder, but did not rotate as in the normal condition; perineal section was made, and when the knife entered the bladder a gush of bloody fluid escaped; the finger was then passed in, but the depth of the perineum prevented more than the

distal phalanx entering, and it was found impossible to explore thoroughly the cavity of the bladder; a Thompson's rubber lithotomy tube was introduced and secured in position.

The patient's position was now changed to admit of suprapubic section, an incision was made from a point four inches above, down to the symphysis pubis. When the subperitoneal layer was exposed it bulged into the wound, its meshes infiltrated with blood; on tearing this apart, a large cavity was opened, bounded below by the posterior surface of the pubes; above, by the parietal peritoneum. The contour of the intestinal coils could be seen through the serous tunic, and a suspicious appearance was noticed in the color of the peritoneum—it was purplish-blue, significant of blood within. There was no time, however, for exploration, nor was it considered proper to make the attempt in so cold a room. Attention was then directed to the prevesical space; the cavity opened into was filled with blood coagula and fluid; there was a fracture, with some displacement, one inch distant from the symphysis. After diligent sponging, and the use of retractors, the point of the rubber tube introduced through the perineum was found lying at the bottom of the cavity, and in the neck of the bladder, which lay contracted about the instrument. With some difficulty it was found that there was a rent in the anterior wall, and by the use of tenacula it was made out to be vertical in direction, and quite extensive; there was no wound of the peritoneum. A second Thompson's rubber tube was introduced through the abdominal wound down and into the rent, and it was packed around with iodoform gauze. The patient was then removed from the operating table to his bed; small long rubber tubes were connected with the large suprapubic and perineal tubes, and conveyed the secretions to vessels beneath the bed.

3d. Reaction favorable, general condition good, but slight complaint of pain; there has been considerable flow of bloody fluid by the perineal tube.

4th. Patient has complained much of thirst; fluid slightly tinged with blood is discharged through the tube in about proper quantity, acid reaction, sp. gr. 1.028, contains 50 per cent. albumen, some pus, and epithelial cells; wound cavities are irrigated three times a day with warm boro-salicylic solution. In the evening his temperature rose to 101°; complained much of pain, referred to the penis; moderate tympanites, considerable annoyance from eructations of gas; small doses of morphia are given, only sufficient to allay pain.

6th. Temp. 102° at 8 P. M. The tampons were removed from the suprapubic incision, and continuous irrigation was instituted.

7th. Patient was delirious through the night. His temperature rose to 103°, then fell to 98°; it then began to rise steadily until it touched 106°, shortly before his death at 4 P. M. on December 8.

It was considered very desirable to have an autopsy, but circumstances which could not be controlled by the staff interfered to prevent. It is extremely doubtful if he died from the effects of the rupture of the bladder, as the drainage was perfect, and there was an entire absence of sepsis in the wounds communicating with the same. The symptoms preceding death indicated blood poisoning, but there were sufficient grounds to regard it as more than probable that there were undiscovered lesions within the cavity of the unbroken peri-

toneum to which it might be due. It will be remembered that it was noted during the operation that the color of the exposed peritoneum was bluish, such as would be caused by the presence of blood within the cavity; but as the operation was being done in an extremely cold room, and the indications were for its rapid execution, it was not deemed proper to prolong it by further exploration, but I have no doubt there were lesions in the abdominal cavity not recognized during life.

Simple extraperitoneal ruptures of the urinary bladder are generally caused by overdistention, due to obstruction in the urethra, either prostatic or from stricture. Factors aiding or predisposing to such accidents may be various pathological changes, ulcerations, tubercular or malignant herniæ, or, in fact, any other conditions that diminish the resistance of the walls. When under circumstances such as above referred to, the organ is in a state of repletion, it requires only a very small amount of violence, in the shape of concussion, as in lighting on the feet when falling; in injuries applied directly, as from impact with moving bodies; or in the not uncommon instances where rupture has been determined by contraction of accessory muscles in efforts to empty the distended organ.

In the cases which more directly concern us at present, those complicated with lesion of the bones entering into the composition of the pelvis, distention predisposes to rupture, but it may occur when the bladder is nearly empty, as in our second case, in which the patient distinctly asserted that he had emptied his bowels and his bladder half an hour before the accident occurred; and yet in his case, when the operation was done in less than four hours after the accident, and before he had recovered from the effects of shock, a condition in which very little urine is secreted, there was an escape of quite a quantity of bloody fluid when the perineal section was completed. In the first case it was presumed that the bladder was moderately distended, as the rupture occurred between three and four hours after urination.

The symptoms of rupture in the uncomplicated cases will vary extremely; generally something is felt to give way, either after the application of violence, or in the attempts to empty the bladder. This is generally followed by hypogastric pain and pronounced symptoms of shock, though in a number of recorded cases it is stated that the patients walked considerable distances to their homes, or to the institutions in which they were treated. It not infrequently happens that the cases are obscured by the accident occurring when the patient is under the toxic influence of alcohol. In such, on recovering from his debauch, complaint will be made of pelvic pain, and of the tormenting desire and inability to urinate. The condition will be determined by physical exploration, by percussion of the abdomen, digital examination through the rectum, bimanual palpation, the introduction of soft and metallic catheters, the former to determine whether the organ is empty or not. The latter may find nothing in the bladder, but it will probably be found that its movements are restricted. It may be possible in some cases to insinuate the point of the instrument into and through the rent, thus giving exit to urine that had escaped into the cavity of the peritoneum, or into the prevesical space of Retzius. If the rent is in the posterior wall, this manœuvre will be

best made by using a short beaked instrument, such as the searcher of Sir Henry Thompson, which may be reversed when in the bladder. When the rent is in the anterior wall, it will be best accomplished by using a silver catheter with a large curve, and directing its point to the anterior wall of the bladder, by depressing the handle of the instrument between the patient's thighs.

A distinguished member of this Society brought a method of early diagnosing intraperitoneal ruptures of the bladder before the profession,¹ in which he advocated injecting the bladder with an antiseptic fluid. It struck me that there are two objections to this procedure: First, that in the event of there being a rupture, it would diffuse the already extravasated fluid over a still larger surface; secondly, that it does not give reliable evidence of an intact bladder, inasmuch as there are several cases on record of intraperitoneal ruptures in which there was a fluctuant tumor in the hypogastric region resembling the distended bladder; and in some of these cases the size of the tumor was diminished by successful catheterism. The escape of a quantity of fluid equal to that injected would be more positive evidence.

In the cases of rupture complicated with fracture of the bones entering into the composition of the pelvis, there is generally an assemblage of symptoms which make the diagnosis comparatively easy. The accidents are the result of extreme violence; patient is in a condition of more or less profound shock; and when he begins to come out of this, his principal complaint will be a desire and inability to pass water. The introduction of a catheter will give exit to a small quantity of bloody urine. Further evidence can only be obtained either by waiting, to the great detriment of the patient, or by the prompt institution of explorative incisions, which can be utilized for drainage if rupture be found to exist. The treatment resolves itself into that for the treatment of extravasation, and the anatomical fact that there is no barrier to the extension of infiltration, external or internal, to the peritoneum, is a strong additional reason why the interference should be prompt and efficient.

My impression is, that it is best, first, to make a perineal section sufficiently free to permit of digital exploration of the bladder; that this should be supplemented by a suprapubic incision, carefully made, to open into the prevesical space, avoiding the peritoneum, unless it should be found involved. In these incisions I would arrange drainage-tubes of large calibre, so that their ends should meet in the cavity of the bladder, the upper tube being surrounded by a light tamponnade of iodoform gauze, which is itself an excellent capillary drain.

In connection with the paper he presented the patient upon whom an operation had been successfully performed. There still remained a small fistulous opening in the suprapubic wound.

He added, in conclusion, that the patient he had presented was troubled with a distressing symptom, viz., he had been unable to have an erection since the injury. He asked if any member of the Society could

¹ On a Satisfactory Method of Early Diagnosing an Intraperitoneal Rupture of the Bladder, by Robert F. Weir, M.D. Medical Record, Jan. 22, 1887.

suggest a remedy. He had himself advised the use of faradization, but the case appeared to be a hopeless one.

In reply to an inquiry, he said that the patient had sexual desires.

DR. WEIR suggested that the galvanic was preferable to the faradic current.

DR. BRIDDON thought the interrupted galvanic might meet the indications. There was some doubt as to whether the condition was due to a cutting off of the nerve supply, or to muscular paralysis.

DR. WEIR said that, although his experience had been limited, he would venture to criticise the practice of making the perineal opening first. He would first make the suprapubic incision, then carry the end of a pair of forceps through the infiltrated tissue, and cut upward upon it from the perineal side. He called attention to the fact that the method of detecting a rupture of the bladder, which he had suggested, was based on two points, the presence of increasing dulness in the hypogastric region from the gradual distention of the bladder, if uninjured, by the injected fluid, and the fact that the same quantity of fluid flowed out as was originally thrown in. Even if, in this test, some of the fluid did escape from the torn bladder, it would only give rise to an increased area of dulness over the hypogastrium, and would do no harm, as the surgeon would at once make his incisions for the proper drainage of the already extravasated urine.

DR. BRIDDON thought that the method suggested by Dr. Weir was not reliable, because there were so many cases in which the rupture was intraperitoneal. Heath and Rivington had been unsuccessful with it. The reader added that he did not claim much for the perineal section.

It was not performed in the case of the patient who recovered, because his condition was so bad that it did not seem to be justifiable. In the other case it was done as an explorative measure, and the opening could afterward be used for drainage.

The suprapubic operation was quite easy; as soon as the retroperitoneal fascia was reached, it bulged into the wound and was readily torn apart. There was no danger of opening the peritoneum. The reader reiterated his preference for the peritoneal section as an explorative measure, because in cases of extensive fracture, with great injury to the soft parts, it might not be advisable to make firm pressure over the hypogastrium, to aid in digital exploration.

THE PRESIDENT thought Dr. Briddon's experience showed that little was to be gained in the way of diagnosis by the perineal incision; he believed that, if it was made at all, it should be limited to a small opening for purposes of drainage. He had recently seen Dr. Keyes drain a bladder in this way after suprapubic lithotomy. A soft catheter was prepared by passing a needle, carrying a long piece of silk, into the eye, and out through the adjacent blunt end of the catheter. In the middle of the silk was a large knot, and the silk was drawn through until the knot stopped it. A long, narrow-bladed knife was passed into the membranous urethra, and along it, and then along the groove of the staff was carried an eyed probe threaded with the silk before mentioned. The end of the probe was passed into the bladder and drawn out through the hypogastric

incision, and then, by pulling upon the silk, the end of the catheter was brought into the bladder. The other end of the silk hung out of the perineal wound and was used to withdraw the whole piece, the catheter being left in place.

DR. SANDS said that it was generally conceded that in cases of lithotomy the bladder could not be drained satisfactorily through the perineal wound.

DR. WEIR remarked that the bladder could not be drained through the perineal wound without a drainage tube being introduced through it, unless the lateral section had been made.

THE PRESIDENT said that in two of Dr. Keyes's cases the suprapubic wounds had closed and the bladder was perfectly drained from below.

DR. BRIDDON thought that if a perineal opening had been made in the case of the patient presented, the sinus would not have continued to discharge so long; in fact, it might still be necessary to perform that operation in order to cause its closure.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, April 7, 1887.

THE PRESIDENT, THOMAS M. DRYSDALE, M.D.,
IN THE CHAIR.

DR. B. C. HIRST read a paper on the etiology and treatment of cases of so-called

LATE INFECTION IN THE PUERPERAL STATE.

He related four cases of so-called late infection in the puerperal state, all due to the same cause, and yielding to the same treatment. The first case was a young primipara delivered without difficulty after a moderately long labor. She left her bed on the eleventh day, having had no fever, and having manifested no unusual symptom. Two days afterward her cervix was exposed to view by means of a bivalve speculum, and a slight laceration was discovered, healing by granulation. The following morning, the fourteenth day after delivery, the patient was unwell, her temperature was 102°; large doses of quinine were given, but the temperature rose to 103°, where it remained with slight morning remission for two days. A more careful examination being made, it was discovered that the uterus was unusually large, that the os was patulous, that there was a foul-smelling discharge, and considerable abdominal tenderness. The history of the case with these symptoms pointed to the retention of membranes, possibly a portion of placenta, and their subsequent decomposition, originated by the admission of air to the vagina and uterus by the use of the speculum. Acting upon this diagnosis, the uterine cavity was lightly scraped out with a dull curette, and a large quantity of decomposing decidua removed. This was followed by an intrauterine injection of bichloride of mercury through a Bozeman's double catheter. The woman's temperature at the time was 103°. The following morning it had sunk to 99°, and within twenty-four hours was normal, and so remained.

The second case was also a primipara. The labor was terminated by the forceps. Upon the eleventh day the woman, although perfectly well until that time, had a morning temperature of 101°, rising in the even-

ing to 102°. The uterus was found larger than it should have been. The os was patulous, and there was a fetid discharge. Profiting by the experience gained in the first case, the uterus was curetted, and a considerable amount of decidua removed, and an intrauterine douche given. In this case the womb almost at once contracted, and the discharge ceased; but the patient had, unfortunately, an exacerbation of a tubercular trouble in one lung, which kept the temperature high for some days.

In the third case, also a primipara, after an instrumental labor, and an apparently normal lying-in period, the temperature rose, on the twelfth day to 99.8°, and on the following day to 100°. At the same time a fetid muco-purulent discharge made its appearance. In this case a very large quantity of decidua membrane was removed, and the scraping was repeated on the following day, whereupon the temperature fell to normal, and the discharge ceased.

The fourth case was a primipara, who, on the sixth day, after an easy labor, had a temperature of 100°, although previously there had been no fever; the uterus here was very large, the os quite patulous, but in this case there was not much discharge. The same treatment was employed that had proved successful in the other cases, with the result of reducing the temperature within twenty-four hours to normal, where it remained.

This experience is entirely too limited to enable one to come to a definite conclusion as to the cause of late infection in the puerperal state, but these cases suggest the possibility, at least, that the retention and subsequent decomposition of shreds of membrane or fragments of placenta will be found to be the most frequent cause of fever late in the puerperal state, and that if not interfered with this condition may lead to septicæmia and pyæmia. Other causes of fever late in the puerperal state are, of course, well known. Partially healed wounds of the cervix, vagina, and perineum may be torn apart, and the fresh wounds thus produced may give entrance to the germs of septicæmia. Exposure to an atmosphere impregnated with emanations from sewers or water-closets from bad sanitation, may give rise to febrile diseases at any time during the puerperium, as proved in the cases related by Dr. Playfair in a recent English journal. There is a possibility that the pyogenic microorganisms which may carry on their work in the uterine cavity without very serious consequences to the patient, may in the tubes manufacture their product, pus, in such quantities that it cannot be drained off, thus producing an abscess that may possibly open into the peritoneal cavity. There is a still more remote possibility that a pyosalpinx may be developed late in the puerperium by other pathogenic microorganisms, by those of gonorrhœa, of tuberculosis, or even those of actinomycosis. Finally, any of the febrile diseases that may attack a woman at any time may fasten themselves upon her during the lying-in period; but it seemed to the author that the most common cause of late infection in the puerperal state is the decomposition of retained membrane or fragments of placenta, and that, therefore, the curette and the intrauterine douche might be employed as a routine treatment in all cases where there occurs late in the puerperium, fever associated with a large uterus, a patulous

os, and a foul-smelling discharge. This treatment can do no harm but may effect much good.

DR. HIRST then exhibited

THE ANTISEPTIC PAD

used by Richardson, of Boston, and Garrigues, of New York, to prevent the entrance of pathogenic germs to the vagina after labor.

DR. PARVIN was not impressed with the necessity for the antiseptic pad, believing that as good results could be had from antiseptic napkins. The oiled silk or muslin used in making it, it seemed to him, might hinder the ready escape of the lochia. After labor the vagina is practically a closed canal, open only for the egress of uterine discharge, and disease germs cannot enter unless that canal be opened by some manipulation of the nurse or the physician, as in giving a vaginal injection or in making an examination. It seems needless to close the vulva completely, and it also seems possible that such closure hinders the escape of the lochia. But be this as it may, if the vulva is carefully washed twice a day, with an antiseptic solution, and if napkins that have been wrung out of a 1 to 2000 corrosive sublimate solution are applied over it, changing them more or less frequently according to the amount of the flow, he thinks as good results can be had as by using the antiseptic pad. Moreover, it seemed to him doubtful whether antiseptic pads, though they have proved very useful in maternities, will be readily accepted in private practice, especially in the country.

The liability of glass to break is to him a conclusive argument against the use of tubes of this material. The best instrument, he believes, is Bozeman's catheter. Formerly it was his custom to wait in cases of septic infection until the flow was offensive, and then at first to endeavor to correct the condition by vaginal, before resorting to uterine injections. He now knows that is wrong, for the patient may perish or have a protracted illness, and then make but partial recovery without the lochia at any time having an offensive odor. Within a year he has seen in hospital practice, and in consultation, eight cases of septic infection where the happiest results were promptly had from antiseptic solutions injected into the uterus. Most, if not all, of these patients probably would have recovered without these injections, but their recovery, judging from similar cases previously observed by him, would have been slow, possibly imperfect, and after a more or less prolonged period of suffering upon their part, and of anxiety on the part of the practitioner. We have in antiseptic uterine injections the essential, and the almost invariably successful treatment of puerperal septicæmia, if this treatment be begun soon enough, and properly carried out.

DR. T. M. DRYSDALE, while conceding the importance of antiseptic precautions in hospital, thought the advantage of these measures in private practice more difficult to prove. Until he relinquished obstetric practice in 1874, he had met with but five cases of puerperal fever in over two thousand deliveries, and in none of these women were any antiseptic precautions used, other than cleanliness, as they were not then known.

DR. LONGAKER believes with Dr. Hirst in the great utility of intrauterine post-partum medication. He has the greatest confidence in iodoform as used by Ehren-derfer, of Vienna, in the form of 100 grain pencils. One

of these is introduced into the cavity of the womb after irrigation, it dissolves very slowly, and continues to medicate the entire utero-vaginal canal for forty-eight or seventy-two hours.

In removing shreds of membrane, after labor at term, or after an incomplete abortion, he uses the finger, and prefers it to any form of curette he has used. Theoretically he would prefer a glass tube for intrauterine irrigation, chiefly for the reason that it is more easily cleansed and kept clean. Hitherto he has always used the Bozeman canula, the only objection to which is the difficulty of cleansing, and hence a possible danger of carrying sepsis from one case to another.

DR. BAER emphatically endorsed what had been said in favor of Bozeman's tube for intrauterine irrigation, and against the glass tube. The return current is sure, and the small size of the instrument as compared with the glass tube renders the introduction easy and safe.

Regarding the pad exhibited by Dr. Hirst, if he believed the theory that the atmosphere is constantly impregnated with germs which poison whenever they come in contact with open vessels, he would certainly advocate the use of an impervious covering for the vaginal orifice. For the theory teaches that where there is no contact with the air there can be no sepsis. But he does not believe this fully; therefore he thinks it safer to place the napkin under and not over the vulva, so as to permit as perfect drainage as possible, thereby giving free exit to the lochia by making of the vagina a drainage tube, its natural function after parturition.

DR. HIRST remarked that the pads were used dry by Dr. Richardson, and moist by Garrigues.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, April 21, 1887.

THE PRESIDENT, A. JACOBI, M.D., IN THE CHAIR.

THE PRACTICAL VALUE OF OUR PRESENT METHODS OF TREATING THE UPPER AIR-PASSAGES.

DR. FRANCKE H. BOSWORTH said that notwithstanding the most ingenious mechanical devices, it is a fact that no case of chronic laryngitis has ever been cured by topical applications. The views of laryngologists have greatly changed within the last few years, and they have long since outgrown the notion that chronic laryngitis is either of tubercular or syphilitic character. The truth is, that non-specific chronic laryngitis is merely secondary to affections of the parts above.

As to applications to the lower pharynx, they are of no service whatever, and this part of the anatomy does not even belong to the air-passages at all, but to the food-tract. The vault of the pharynx is the seat of certain morbid changes which have been supposed to constitute naso-pharyngeal catarrh. The excessive secretion which is fancied to be characteristic of the condition, however, is an absolute myth. There is, in fact, diminished secretion (the secretion, however, being perverted, so that it becomes thick and inspissated to a degree that it is not removed by the ordinary efforts at expectoration), and the indication is not for astringent applications to the pharynx, but for some means of treatment which reaches the nasal passages. Topical treatment here, therefore, is of no use, and in such

conditions as hypertrophy of the pharyngeal tonsil no local measure is of any service, except to act as a palliative. As to nasal catarrh, it is not a hypersecretion to be cured by astringents. These have all been tried to the fullest extent, and found to be of no avail. The essential symptoms are due to conditions which interfere with the great function of exosmosis of serum, and douches and sprays have never yet cured inflammatory conditions of the upper air-passages, although such applications are undoubtedly of more or less use. The nasal douche has attracted a great deal of attention of late years, and its dangers, as well as its benefits, have been vastly over-estimated. Inhalations have fallen into disuse, and the spray is now deservedly considered the most prominent means of local treatment. It is undoubtedly of great assistance as a cleansing and palliative measure, but is nothing more than this.

As to any special value to be attached to any particular form of apparatus, there is none. Compressed air is supposed to possess superior advantages for the spray, and the moral effect of the various devices resorted to for employing this agency is undoubtedly good; but with an instrument which can be purchased for a dollar and a half as perfect a spray can be made as with the most elaborate machinery costing hundreds of dollars. Millard's atomizer, he thought, is the one which is most convenient and serviceable. The curative treatment of affections of the upper air-passages, however, consists in treatment of the nasal tract by the removal of obstructive lesions, whether bony or of other nature, giving rise to nasal stenosis; and this is to be accomplished by the snare, the saw, the knife, or the cautery.

The object sought to be secured by the use of the cautery is not destruction of tissue. In hypertrophic disease the process involves principally the connective tissue, and the essential feature of chronic rhinitis is a chronic hyperæmia of the bloodvessels, with increased nutrition of the part. The local effect of cocaine is to produce anæmia, and, having reduced the existing turgescence with this agent, a mild caustic which will have very much the action of a film of collodion, should be applied. There is nothing so good for this purpose, in his opinion, as chromic acid; a few crystals of which laid upon the parts destroy the superficial layer of the membrane, converting it into a slough which adheres closely to the surface for three or four days, holding it down, as it were, and preventing a return of the turgescence. This simple method by chromic acid is greatly to be preferred to the galvano-cautery, enabling us to accomplish, as it does, all that can be effected with this complicated apparatus in a manner much more satisfactory in every way. The subject of neoplasms, he said, did not properly come under the present topic of discussion. Acute catarrhal inflammation of the nasal passages is merely a symptom of chronic rhinitis, and, as it can be readily eliminated by means of cocaine, did not require further consideration.

In speaking of our methods of examination, he said that the value of the laryngoscope, as generally employed, is greatly overestimated, and that neither in Tobold's nor Sars's instruments is there any optical principle involved. A small head-mirror, with a good

light, answers every purpose perfectly well. Laryngologists had ceased to treat by means of machinery when they learned how to treat their cases successfully; and he quite agreed with the sentiment expressed by Dr. Daly at the meeting of the International Congress at Copenhagen, that the sooner they ceased to be throat doctors and became throat surgeons, the sooner would they achieve success in their specialty.

DR. ANDREW H. SMITH, while expressing his belief in the efficacy of topical applications in many more or less acute conditions, said that in long-established cases of what is known as chronic catarrh, there were serious doubts in his mind as to the advantage of any local treatment which had as yet been devised.

DR. WM. H. THOMSON said that in his opinion the treatment of chronic disease of the upper air-passages should be directed by two principles. The first of these is the taking cognizance of the cutaneous nerves liable to be concerned in the trouble, and the second, local disinfection.

There are very few vaso-motor tonics, and there are none which compares with cold as a remedial agent. It is very useful to apply cold water to the nape of the neck on rising in the morning, especial care being taken that the hair should not become even dampened. Sponging of the throat is also excellent, and these cold applications should be kept up for a long period of time. The back of the neck and shoulders should also be well rubbed with olive oil. The second indication is to protect the cutaneous surface against exposure.

The second principle of treatment is local disinfection. For this purpose our methods are at present both crude and defective.

It is undoubtedly true that a considerable number of cases are to be attributed to malformations, either natural or acquired; but in those which are not, it is important to know what agents ought to be used. In his opinion, the carbolic acid class, including all coal tar derivatives, are best for the suppurative diseases. In necrotic cases, on the other hand, remedies of the chlorine group, including bromine, iodine, and sulphur, are indicated, and insufflations into the pharynx of bismuth and calomel have long been used.

DR. H. HOLBROOK CURTIS spoke of the great value of chromic acid, which for some time past he had used to the exclusion of all other escharotics. When this is applied to the turgescient or hypertrophied turbinated bodies, it not only has a most marked beneficial effect upon the parts immediately concerned, but also the vocal apparatus of the patient. Hence, such applications are of special service to singers, actors, and others obliged to use the voice in public. This is a reflex effect, and there can be no doubt that there is a distinct correlation between the turbinated bodies and the larynx. In illustration of this point, Dr. Curtis related the case of a prominent operatic prima donna who had presented herself at his office with a slightly congested condition of the vocal bands. He applied chromic acid to the turbinated bodies, and there was at once a marked improvement in the voice. So much pleased was the patient with the effect thus produced, that, on two occasions afterward, she came on from Philadelphia between her performances, expressly to have the application made; and whenever he repeated it, it was always successful in restoring the lost bril-

liancy of tone. His practice is to apply the agent in crystallized form by means of a flat copper applicator, and afterward wash off the parts with Dobell's spray. No bad results from the use of chromic acid have ever been published. In conclusion, he remarked that the sooner the farce of applying strong astringents and other baneful agents to the larynx is abandoned the better it will be for all concerned.

DR. WM. CHAPMAN JARVIS thought it most judicious to pursue a middle course. The spray he had always found a very useful means of treatment when it was properly employed. Cocaine could be applied more efficiently by means of the spray than in any other way. When thus used it produced anæmia of the mucous membrane at once, and it was always noticeable that in painful conditions there was a return of the pain just as soon as the anæmia thus caused disappeared. If the cocaine spray is kept up for a considerable length of time with a small tube, we get beneficial results which can be obtained in no other way.

There is, however, a certain proportion of cases in which cocainization cannot be produced, and in these the application of rhigolene is to be preferred when highly congested growths of the turbinated bodies are to be operated upon. A few seconds are all that is necessary to produce profound rhigolene anæsthesia, and if a thick covering of any suitable unguent is made use of to protect the parts during the operation, the application of this agent is not attended with any unpleasant results.

The spray is also very useful for cleansing purposes. With a coarse spray all the advantages of the douche can be obtained, while the hearing is not endangered, as is sometimes the case when the latter is employed. He is in the habit of using ten pounds pressure with a tube one-eighth of an inch in diameter for a coarse spray, and with a tube of extremely small diameter for a fine spray. There is no method yet devised by which powders can be so satisfactorily applied to the upper air-passages as by means of compressed air. When suitable agents are applied in the infinitesimally divided condition which is possible by this method, they are soothing in effect; but when powders are used in any other way they are always irritating. As regards powders, however, there is only one that is tolerated by the upper air-passages, and that is iodoform. Even boracic acid or bismuth is not well borne, as can be readily tested even by any one whose nasal mucous membrane is in a normal condition.

As to caustics, he believes that both chromic acid and nitrate of silver serve a useful purpose in certain conditions. Chromic acid, however, he thinks, should never be applied for turbinated turgescence and hypertrophy. It is very slow in its action when thus employed, and though it probably eventually removes the hypertrophy, provided the patient and the physician both have patience enough, he considers it a very treacherous kind of drug. But for papilloma, especially of the larynx, it is to be regarded as a real specific. As regards the mucous membrane of the rest of the upper air-passages, he strongly doubts its efficacy. Nitrate of silver has its uses. Although its action in the larynx, as lauded by Horace Green, is no doubt exaggerated, it is still of considerable service in subacute laryngitis.

It is an especially useful caustic for mucous patches, which disappears under its protecting agency. Dr. Jarvis said he used the term protecting advisedly, as its characteristic action is to cling to the tissue until they heal, and no other agent will accomplish this purpose so well. That ulcers of the mucous membrane need some such protection as this he had demonstrated by covering one within easy reach with a little rubber cap. It at once showed a tendency to heal; but when the rubber cap was left off, it returned to the same condition as at first.

As to surgical procedure, compared with other methods of treatment, he thought it a well-established fact that it is not really worth while to keep on making topical applications for an indefinite period of time, when at a single sitting we can remove the whole trouble. What then is the use of worrying with chromic acid, nitrate of silver, or the galvano-cautery? The problem to be solved is merely a question of nasal drainage; and he claimed that there is not a hypersecretion, but that the trouble present is due to distortion of the nasal planes and gutters. The so-called hypersecretion results simply from accumulation, and when the nostrils are permitted to be flushed by the natural secretions, this entirely disappears. The indication is, therefore, to remove all existing obstruction.

In conclusion, Dr. Jarvis made some remarks upon atrophic rhinitis, stating that when a cure cannot be effected, great relief can be given by means of thorough cleansing and the use of unguents, especially vaseline, applied in the form of spray. In this manner patients whose life has been a burden often for ten or fifteen years, on account of the intolerable stench attending the condition of the nasal passages, have, by the simple use of the detergent douche and vaseline, been enabled to go once more into society without rendering themselves offensive to all around them. This practically constitutes a cure in this incurable dry atrophy of the nasal passages.

CORRESPONDENCE.

PREVENTION OF ARTERIAL HEMORRHAGE.

To the Editor of THE MEDICAL NEWS,

SIR: In the issue of THE MEDICAL NEWS for April 23, 1887, there appears an abstract of a paper copied from the *Lancet-Clinic* of April 2, 1887, entitled "A Simple Method of Preventing Arterial Hemorrhage," by Dr. Muscroft, of Cincinnati, which was successfully used in an amputation at the hip-joint, and a high amputation of the arm for elephantiasis.

"He proposed to pass a strong pin or needle under the femoral vessels *en masse*, high up in Scarpa's triangle, and then by winding a cord around the exposed ends of the needle, protected by corks, in a figure-of-eight turn to secure sufficient pressure to occlude the artery completely."

In the *Archiv für klin. Chirurg.*, Bd. 26, Heft 4, Prof. Trendelenburg, of Rostock, reports the following method for the avoidance of hemorrhage in hip-joint amputations: "A steel rod thirty-eight centimetres long, six millimetres broad, biconvex on section, and two millimetres thick at the centre, with blunt edges, but provided with a removable lance-shaped point three

centimetres long, is passed obliquely through the soft parts in front of the joint, in the same way as the two-edged knife in the well-known method of Lisfranc, only about two centimetres higher. The rod enters, therefore, about four centimetres below the anterior superior spinous process of the ilium, passes between the femur and the femoral artery, and emerges at the fold of the scrotum. The point is now removed, and an elastic tube or band firmly wound in a figure-of-eight fashion round the ends of the rod and passing in front of the thigh" (*Amer. Journ. Med. Sciences*, April, 1882, pp. 582, 583).

It will thus be seen that the procedure of Dr. Muscroft is identical in principle with that of Trendelenburg. On the 13th of June, 1882, I amputated at the hip-joint successfully, according to the method of Trendelenburg, and reported the same in *The American Journal of the Medical Sciences* for October, 1882, p. 394. I also exhibited the instrument above described to the surgical section of the American Medical Association at its meeting in Washington in 1884.

THEODORE R. VARICK, M.D.,
Surgeon to Jersey City Hospital,
Medical Director and Surgeon to St. Francis Hospital,
Jersey City, N. J.

NEWS ITEMS.

MONTREAL.

(From our Special Correspondent.)

ROYAL VICTORIA (JUBILEE) HOSPITAL.—Two of our millionaires, Sir George Stephen, Bart., and Sir Donald A. Smith, have announced that it is their attention to build and endow a hospital in honor of the Queen's Jubilee. This hospital is to be for purposes of medical education and the training of nurses as well as for the treatment of the sick poor. Each gives the magnificent sum of \$500,000—of this, \$250,000 is to build the hospital and \$750,000 to endow it. They have requested the city to donate to them unconditionally a lot of land situated at the base of the mountain on which to build the hospital, as this is the only favorable site they have been able to find. The City Council have favorably received the request. The details of the scheme have not yet been disclosed, but it is believed that the appointment of the medical and surgical staff will be made specially in the interests of medical education.

CONTINGENT FUND FOR THE WISCONSIN BOARD OF HEALTH.—The Assembly of Wisconsin has passed a bill appropriating \$15,000 as a contingent fund to be used, if necessary, in the next two years, by the State Board of Health, in preventing the introduction of cholera into that State.—*Sanitary News*, April 16, 1887.

MASSACHUSETTS GENERAL HOSPITAL.—Professor R. H. Fitz has been appointed visiting physician to this hospital, *vice* Professor Francis Minot, resigned.

THE ASSOCIATION OF GENITO-URINARY SURGEONS will hold its first annual meeting, at the Laurel House, Lakewood, N. J., on May 17 and 18, 1887.

The following papers are announced in the programme:

Address of Welcome, by the temporary Chairman, Dr. E. L. Keyes.

Connection between Masturbation and Stricture of the Urethra, by Dr. S. W. Gross, of Philadelphia.

On Chancroids, by Dr. F. B. Greenough, of Boston.

On Horny Growth of the Penis, with Exhibition of a Remarkable Case, by Dr. J. H. Brinton, of Philadelphia.

Suprapubic Cystotomy for Vesical Tumor and Large Calculus, with Comments upon Suture and a Suggestion for Drainage, by Dr. E. L. Keyes, of New York.

Case of Hysterectomy for the Relief of Pyelitis from Obstruction, by Dr. A. T. Cabot, of Boston.

On the Choice of Operation for the Removal of Vesical Calculus in Cases Complicated by Prostatic Obstruction, by Dr. J. P. Bryson, of St. Louis.

Idiosyncrasy as Affecting the Specific Treatment of Syphilis, by Dr. P. A. Morrow, of New York.

Observations on the Use of Oil of Wintergreen in the Treatment of Gonorrhœal Rheumatism, by Dr. R. W. Taylor, of New York.

Some Cases of Pyelitis in which Frequent and Painful Micturition was the Chief Symptom, by Dr. George Chismore, of San Francisco.

On Temporary Overstrain of the Bladder Producing Chronic Retention of Urine, by Dr. F. N. Otis, of New York.

Early Syphilitic Epididymitis, by Dr. J. N. Hyde, of Chicago.

Prostatotomy for Obstruction: Two Cases, by Dr. A. T. Cabot, of Boston.

A Plea for the More General Use of Nitrate of Silver in the Deep Urethra, with an Improved Instrument for its Application, by Dr. E. L. Keyes, of New York.

A Rare Form of Septicæmia, following Operation for Urethral Stricture: Septicémie Foudroyante Gazeuse, by Dr. R. W. Taylor, of New York.

Exhibition of Sections of Tubercular Testes with Bacilli, and of the Coexistent Bacilli in the Sputum, by Dr. R. W. Taylor, of New York.

THE AMERICAN CLIMATOLOGICAL ASSOCIATION will hold its fourth annual meeting in Baltimore, on Tuesday and Wednesday, May 31st and June 1st.

THE STATE MEDICAL SOCIETY OF ARKANSAS will hold its twelfth annual meeting in Little Rock, on Wednesday, Thursday, and Friday, June 1st, 2d, and 3d.

THE ONTARIO MEDICAL ASSOCIATION will hold its seventh annual meeting in Toronto, on Wednesday and Thursday, June 8th and 9th.

THE BEST TYPE AND COLORS FOR SCHOOL BOOKS.—The following is the advice of DR. TURNER, Director of the Museum of Hygiene of the United States Navy, in his annual report:

Without entering upon an extended notice of this section of sanitary science, leaving out for the present the consideration of the school-house, a note here appears necessary concerning the hygiene of the eyes of school children. Some German sanitary observers in this direction have condemned the dark slates now in use on physiological grounds, and on the same grounds have suggested the use of white slates with dark pencils. Taking these premises, with the results of some personal experience and observation in determining ranges of

vision, as well as of the color-sense, the writer is led to suggest that a uniform "face" of type, as *antique*, be adopted for school books, and that the traditional black printing ink be abandoned for inks of neutral tints in printing such books.

This accepts a proviso that the paper remains as now—white and unglazed. How far sharpness of definition of letters can be secured by such color use, the printer can determine. Further observations may support the correctness of these suggestions; that there is a strain upon the nervous apparatus of vision in the reading of books as printed at present (black on white) is an accepted fact; that this strain is a cause of asthenopia, is also well made out, and that the apparatus of accommodation in the eye is affected, follows as a consequence. This strain, expressed in ordinary language as "tired eyes," is relieved by letters printed on tinted paper, and by colored printing inks on white or colored paper; and thus a circus poster, from these facts, oft-times contains more refreshing reading, in a hygienic as well as a mental sense, than some newspaper or books. It needs but the simple statement, in this consideration, that glaring colors are always to be avoided.—*Chicago Journal and Examiner*, March, 1887.

DR. LEWIS SAYRE'S CLINICAL LECTURES ON ORTHOPÆDIC SURGERY have been translated into French by Dr. Henri Thorens.

THE CELEBRATED GREEK SCHOLAR, DR. ERNST CURTIUS, who is seventy-three years of age, recently left Professor Schweigger's Hospital, after a successful operation for cataract.

ANALYSIS OF "TEMPERANCE DRINKS."—The chemist of the Massachusetts State Board of Health has recently analyzed a large number of so-called temperance drinks, and has found that all of them contain alcohol, one of them containing as much as 44.3 per cent. Several of them contain more than 40 per cent., and a very large proportion more than 20 per cent. One of these is said by its manufacturer to be "a purely vegetable extract, stimulus to the body without intoxicating." "Inebriates struggling to reform will find its tonic and sustaining influence on the nervous system a great help to their efforts." This preparation was found to contain 41.6 per cent. of alcohol.

Tonics.

Carter's Physical Extract, Georgetown, Mass., 22 per cent.

Hooker's Wigwam Tonic, Haverill, Mass., 20.7 per cent.

Hoofland's German Tonic, Philadelphia, 29.3 per cent.

Hop Tonic, Grand Rapids, 7 per cent.

Howe's Arabian Tonic, New York, 13.2 per cent.

Jackson's Golden Seal Tonic, Boston, 19.6 per cent.

Liebig Company's Coca Beef Tonic, New York, 23.2 per cent.

Parker's Tonic, New York (advertised as without stimulants), 42.6 per cent.

Schenck's Sea Weed Tonic, Philadelphia, 19.5 per cent.

Bitters.

Atwood's Quinine Tonic Bitters, Boston, 29.2 per cent.

Atwood's Jaundice Bitters, Portland, 22.3 per cent.

Baxter's Mandrake Bitters, Burlington, 16.5 per cent.
 Baker's Stomach Bitters, New York, 42.6 per cent.
 Brown's Iron Bitters, Baltimore, 19.7 per cent.
 Burdock Blood Bitters, Buffalo, 25.2 per cent.
 Carter's Scotch Bitters, Georgetown, 17.6 per cent.
 Colton's Bitters, Westfield, 27.1 per cent.
 Drake's Plantation Bitters, New York, 33.2 per cent.
 Flink's Quaker Bitters, Boston, 21.4 per cent.
 Goodhue's Bitters, Boston, 16.1 per cent.
 Hartshorn's Bitters, Boston, 22.2 per cent.
 Hoofland's German Bitters, Philadelphia (claimed to be free from all alcohol), 25.6 per cent.
 Hop Bitters, Rochester, 12 per cent.
 Hostetter's Stomach Bitters, Pittsburg, 44.3 per cent.
 Sulphur Bitters, Boston (contains no sulphur), 20.5 per cent.

Langley's Bitters, Boston, 18.1 per cent.
 Mexican Tonic Bitters, Boston, 22.4 per cent.
 Porter's Stomach Bitters, New York, 27.9 per cent.
 Bush's Bitters, New York, 35 per cent.
 Sherry Wine Bitters, Wakefield, 47.5 per cent.
 Cinchonia Bitters, Providence, 13.1 per cent.
 German Bitters, Concord, 21.5 per cent.
 Strengthening Bitters, New Bedford, 29 per cent.
 Old Continental Bitters, Lynn, 11.4 per cent.
 Walker's Vinegar Bitters, New York, 6.1 per cent.
 Warner's Safe Tonic Bitters, Rochester, 35.7 per cent.
 Warner's Bilious Bitters, Boston, 21.5 per cent.
 Wheeler's Tonic Sherry Wine Bitters, Boston, 18.8 per cent.

Wheat Bitters, New York, 13.6 per cent.
 Faith Whitcom's Nerve Bitters, Boston, 20.3 per cent.
 Williams's Vegetable Jaundice Bitters, Lowell, 18.5 per cent.—*Boston Med. and Surg. Journal*, March 10, 1887.

DR. CHRISTOPHER JOHNSTON, of Baltimore, has recently, in an address delivered before the Alumni Association of the University of Maryland (*Maryland Med. Journal*, April 9, 1887), given the following new illustration of the old adage that there is nothing new under the sun. Dr. Chassaignac, in 1850, revived the drainage tube, and claimed its discovery. But this valuable instrument had a much higher antiquity, since its employment was regarded as an "easy remedy" one hundred years before. Thus it is related in the *Country Housewife's Family Companion*, by W. Ellis, farmer, London, 1750: "How a person's wounded thigh was cured by a most easy remedy." "Now it happened, that in this interim of time, Mr. Edward Thome, a butcher, of great dealing, living at Little Gaddesden, in Hertfordshire, and who killed all or most of the Duke of Bridgewater's beasts for his numerous family, had a violent scorbutick humour broken out in his thigh, that so lamed him, as to necessitate his having recourse to a professed surgeon, but notwithstanding his application Mr. Thome was still in a very painful sad condition; in so much that the late good Scroop, Duke of Bridgewater . . . seeing this man (his butcher) in a very decrepit condition, asked him what was the matter? He told his Grace how lame he was by a wound in his thigh, and that he was hardly anything the better for what his surgeon had done for him. Upon this the Duke offered to give him his letter for carrying it to London, and to wait on that celebrated surgeon the late

Mr. Bouchier, for his advice; for you must know that this person was so skilful as to be encouraged (as I am informed) by a large yearly salary from government, for giving his advice gratis to his Majesty King George the Second's subjects; and abundance of service he did to great numbers of people, amongst whom was this Mr. Thome, who, when he had presented him the Duke's letter, and seen his wound, asked him who was his surgeon? He told him. Says Mr. Bouchier, go tell him he is a blockhead, for proceeding thus in a wrong manner, and bid him get a black-lead pipe thrust into the wound, there to remain for the pus to evacuate through it, and as the wound heals it will push out the pipe by degrees, which must from time to time have its end clipped off with a pair of scissors, lest the shirt catch it and tear it out, for no salve will affect this sort of wound.

"N.B.—The black-lead pipe was at first four inches in length, with a hole in the middle of it, a little bigger than that of a common tobacco-pipe, and of its shape, which, by the help of a bandage, kept in the wound, till it descended by leisure degrees, and was diminished by frequently clipping off, till the cure was perfected."

LEPROSY AMONG NORWEGIAN IMMIGRANTS.—The Norwegian Government has taken another step toward discovering the origin and nature of leprosy, which is so common on the west coast of Norway, by dispatching Dr. G. A. Hansen, Director of the Leprosy Hospital at Bergen, to North America, for the purpose of inquiring into the heredity of the disease among Scandinavian emigrants to the United States.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 23, 1887.

RUSSELL, A. C. H., *Passed Assistant Surgeon, U. S. N.*—Ordered to duty at Naval Laboratory, New York, May 2, 1887.

HEFFENGER, A. C., *Passed Assistant Surgeon, U. S. N.*—Ordered to Widows' Island, Me., to superintend building a naval hospital, wharf, and other improvements under instructions of the Surgeon-General of the Navy.

WOODRUFF, CHARLES E., *Assistant Surgeon, U. S. N.*—Resignation accepted, to take effect April 8, 1887.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM APRIL 19 TO APRIL 25, 1887.

SMITH, J. R., *Lieutenant Colonel and Surgeon*.—By Par. 8, S. O. 92, A. G. O., April 21, 1887, detailed as member of board to meet in Washington, D. C., April 28, to prepare rules and regulations for the government of the Hospital Corps of the Army.

HEIZMANN, CHARLES L., *Major and Surgeon*.—By Par. 8, S. O. 92, A. G. O., April 21, 1887, detailed as member of board to meet in Washington, D. C., April 28, to prepare rules and regulations for the government of the Hospital Corps of the Army.

TAYLOR, MORSE K., *Major and Surgeon*.—Relieved from duty at Fort Sill, I. T., May 10, 1887, to proceed home, San Antonio, Texas, preparatory to retirement.—Par. 20, S. O. 92, A. G. O., April 21, 1887.

AINSWORTH, FRED. C., *Captain and Assistant Surgeon*.—By Par. 8, S. O. 92, A. G. O., April 21, 1887, detailed as member of board to meet in Washington, D. C., April 28, to prepare rules and regulations for the government of the Hospital Corps of the Army.

MOSELEY, EDWARD B., *Captain and Assistant Surgeon*.—Ordered for duty at Whipple Barracks, Arizona.—S. O. 89, A. G. O., April 18, 1887.

CABELL, JULIAN M., *First Lieutenant and Assistant Surgeon* (recently appointed).—To proceed to Fort Omaha, Nebraska, and report in person to the commanding officer of that post for temporary duty.—Par. 19, S. O. 92, A. G. O., April 21, 1887.